AUGUST 1956

AMERICAN ARTISAN

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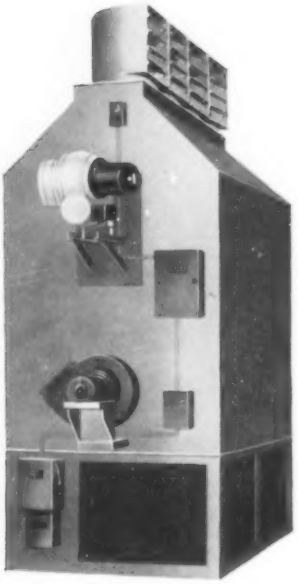
FROM THE EXTENSIVE NEW

Jackson & Church line..

THE BEST SOLUTION TO YOUR DIFFICULT

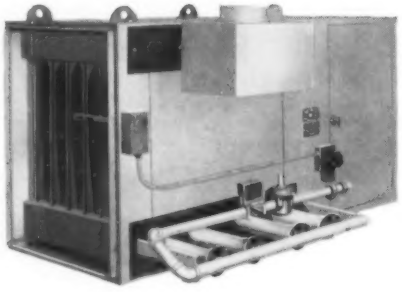
COMMERCIAL AND INDUSTRIAL HEATING PROBLEMS



NEW J-C DIRECT-FIRED UNIT HEATERS and J-C SUSPENDED UNITS are the most versatile members of the famous Jackson & Church Warm Air Heating line. A check of the performance figures of these units against your own commercial and industrial heating needs, proves again that Jackson & Church solves more heating problems . . . better!

NEW J-C DIRECT-FIRED UNIT HEATERS

Available in outputs from 400,000 to 2,000,000 Btu., they can be installed on the floor, or suspended either inverted or horizontally. J-C Direct-Fired Unit Heaters are designed for either No. 2 or No. 4 oil, gas firing, or combination oil-gas. They are self-contained, automatically controlled units equipped with air circulating blowers. J-C Direct-Fired Unit Heaters make possible savings in installation costs, and maintenance costs.



NEW J-C SUSPENDED UNITS

All the advantages of suspended heating — easy placement in out-of-the-way locations, savings in valuable floor space, almost limitless zone heating possibilities — now available for plants, stores, churches, schools and other large structures. New gas models with inputs of 200,000 to 400,000 Btu., with some units A.G.A. approved as horizontal furnaces or as blower type heaters. Oil-fired suspended units have outputs up to 1,000,000 Btu/hr. Underwriters approved as a complete unit.

POWERATED	POWERAIRE	DIRECT-FIRED	COUNTERFLOW	SUSPENDED
Outputs	Outputs	Outputs	Outputs	Outputs
400,000 to	152,000 to	400,000 to	100,000 to	89,000 to
3,800,000 Btu	320,000 Btu	2,000,000 Btu	175,000 Btu	1,000,000 Btu

For complete information contact your nearest Jackson & Church representative or write direct to the factory.

J-C **JACKSON & CHURCH** FURNACE DIVISION

SAGINAW, MICHIGAN

For the permanence of galvanized STEEL and

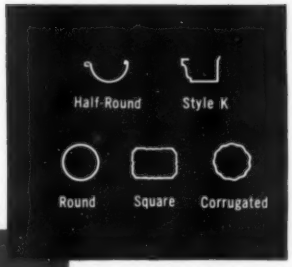
installations that stand up . . . profits that stand out!

. . . use *MILCOR*® Gutter and Conductor Pipe

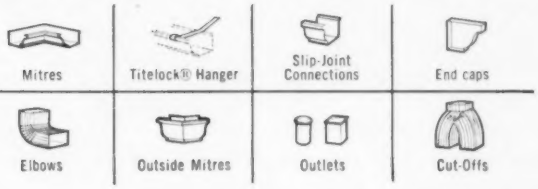
You need the *strength of steel* in gutter and conductor pipe to stand up against ladders and other construction hazards. You need the *permanence* of *galvanized steel* to combat the extremes of weather for years to come. You get both of these with Milcor Gutter and Conductor Pipe.

Milcor Gutter, Conductor Pipe and Accessories are precision made, fit together quickly and accurately on the job, keep your costs down.

Order Milcor Gutter and Conductor Pipe for all your jobs. Get prices from your jobber or nearest branch listed below.



You can carry a complete line of Milcor gutter, conductor pipe, elbows, and accessories



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INLAND STEEL PRODUCTS COMPANY

Dept. H, 4023 WEST BURNHAM STREET • MILWAUKEE 1, WISCONSIN

OFFICES IN: BALTIMORE • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DETROIT
KANSAS CITY • LOS ANGELES • MILWAUKEE • MINNEAPOLIS • NEW YORK AND ST. LOUIS.

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AMERICAN ARTISAN

AUGUST 1956

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Founded 1864; Vol. 93 No. 8

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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How to fulfill the
PROFIT PROMISE OF OHI

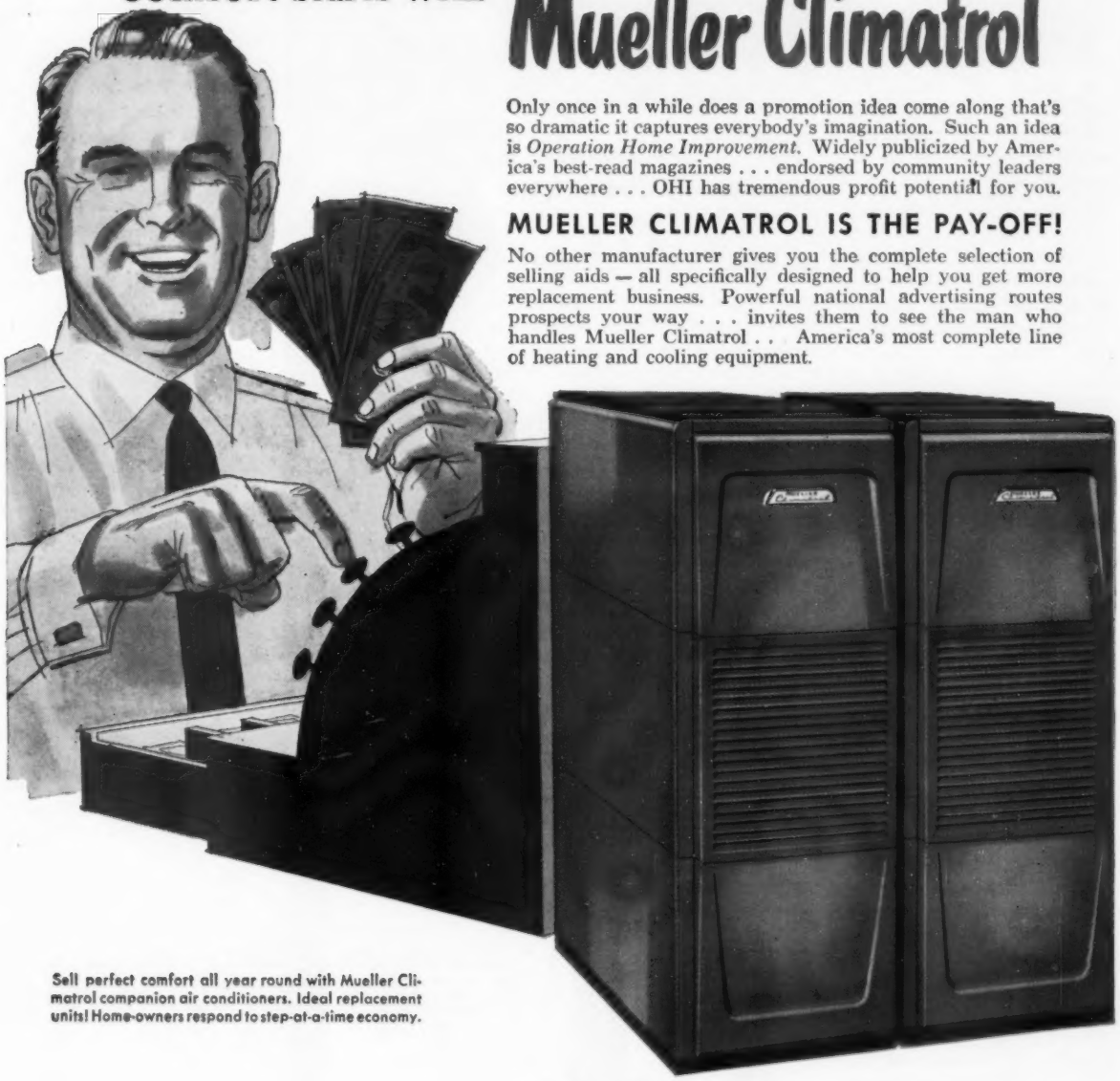
OPERATION HOME IMPROVEMENT

Home improvement starts with **comfort**...
comfort starts with Mueller Climatrol

Only once in a while does a promotion idea come along that's so dramatic it captures everybody's imagination. Such an idea is *Operation Home Improvement.* Widely publicized by America's best-read magazines . . . endorsed by community leaders everywhere . . . OHI has tremendous profit potential for you.

MUELLER CLIMATROL IS THE PAY-OFF!

No other manufacturer gives you the complete selection of selling aids — all specifically designed to help you get more replacement business. Powerful national advertising routes prospects your way . . . invites them to see the man who handles Mueller Climatrol . . America's most complete line of heating and cooling equipment.



Sell perfect comfort all year round with Mueller Climatrol companion air conditioners. Ideal replacement units! Home-owners respond to step-at-a-time economy.

Sales are
turning greener
every day!

see your man from

Mueller Climatrol

Get all the facts on what we're doing to help you capitalize on Operation Home Improvement. Ask your man from Mueller Climatrol . . . or write Mueller Climatrol, Dept. 86, 2030 W. Oklahoma Ave., Milwaukee 15, Wis.

the editor's notebook

Thumbing Through This Month's Artisan

. . . we find the summing up of results of the Austin, Tex. study by the National Association of Home Builders in the article, *Here's the Final Report on the Air Conditioned Village*. We see the findings take shape in the form of suggestions which point the way to improved installation and operation of year 'round air conditioning. The report, compiled from information gathered through a complete heating and cooling cycle in 22 occupied homes, represents findings of a comprehensive series of technical, medical and physiological studies taken under widely varying conditions and provides a wealth of information for dealers who want to capitalize fully on the air conditioning boom.

Motors

. . . and we compare the role of the air conditioning serviceman with that of a doctor in the conclusion of a two-part study with T. N. Schierloh who shows how *Diagnosis and Cure of Motor Ailments Keep Cooling Systems Healthy*. The author emphasizes the importance in the overall air conditioning picture of training salesmen in product knowledge (anatomy and physiology), protective maintenance (hygiene and health), diagnosis (trouble shooting), therapy and surgery (adjustment and repair) of all types of electric motors used in air conditioning systems.

Specialties

. . . we are shown how *Safety Features Build Specialty Market for Fire Walls and Escape Enclosures* made of fluted zinc clad steel sheets on each side of a noncombustible core. We visit a sheet metal contractor who concentrates on large buildings and manufacturing plants for this specialty work, which has tremendous appeal when prospects are reminded of the safety features and saving in insurance costs provided by installation of fire walls and enclosures, fire doors and other protective items. We inspect the panels used for this type of work and we observe fabrication techniques employed by this experienced sheet metal contractor.

IT'S NEW...IT'S HERE
E 1/4 1/2 3/4 F
STOP FILLING
Sentry's
AT-A-GLANCE
ODF* TANK GAUGE
gives exact reading level of oil in tank
at point of delivery!
Located outside of building at fill pipe, this new, easy-to-read fraction calibrated, pressure-tight gauge shows the exact level of oil in tank at all times! Saves costly, time consuming trips to basement and unnecessary unreeling of hose . . . Permits delivery without disturbing customer and eliminates spills as there is a "stop filling" indicator on calibration. Made of weather-proof materials throughout with thermometer indicator securely encased in plastic dome that will not fog or cloud up. No gears, cams, magnets, tapes or intricate mechanisms to get out of order. Write for complete information and low cost unit prices on this modern "delivery point" remote reading gauge today.
"Seeing is believing"
"No more blind fills for me"
"No more spills with fills"
*OIL DEALERS' FRIEND
TYPE ODF-1½ Fits 1½" tank opening
TYPE ODF-2 Fits 2" tank opening.
TELLS WHEN OIL IS NEEDED
. . . HOW MUCH IS NEEDED
. . . WHEN TO STOP FILLING
• Weather-tight plastic dome calibration assembly.
• Easy-to-read indicator.
• Shows exact reading level at all times.
• Made of quality oil, weather and corrosive resistant materials.
• Durable, heavy-duty construction.
• No complicated mechanism.
• Simple and quick to install.
• Lowest cost remote reading gauge on market.
On guard—24 hours a day
KRUEGER Sentry GAUGES
GREEN BAY • WISCONSIN

the editor's notebook

(continued)

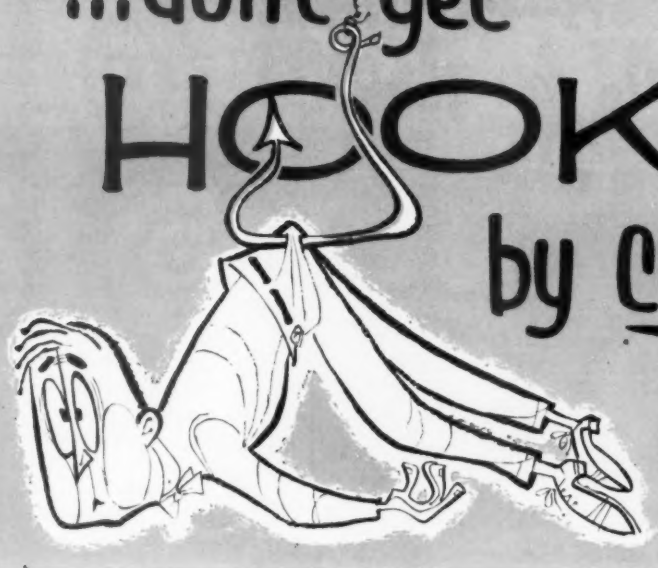
Zones

. . . we meet a heating dealer who has found that *Zone Control Is A Selling Tool* which meets the individual demands encountered on each job due to differences in exposure, customers' requirements, types of fuel and structural limitations. We see how this firm has gained a fine reputation which draws business from a 75 mile radius by impressing prospects with the thoroughness which goes into each proposal and the impressive list of satisfied owners of zone systems. We especially note the selling power of the multi-colored drawings included with each proposal which sharply define each zone as well as supply and return systems.

Window AC Sales Up 50% in Chicago

IN CHICAGO, window air conditioning units have been selling faster during 1956 than in any previous year on record. According to a survey taken by Commonwealth

...don't get HOOKED by cut-price heating!



Tempting bait, this cut-price heating! But look out for the "hooks"! Service call-backs, for example. They'll dog you day and night when complaints of noisy operation, chilly floors, high fuel bills, untimely breakdowns and other symptoms of a cut-price heating job roll in. They can cost you *far more* than those few profit dollars you had in the job. And how just one shivering customer can tarnish your good name!

Refuse the bait when you're pressured on price. A quality Janitrol gas or oil furnace, in a system that follows National Warm Air Heating and Air Conditioning Association recommendations, costs just a little more to install—and *far less* in the long run. What's more, it provides comfort, health and peace-of-mind no cut-price system can deliver. When you tell prospects these facts, they prefer quality every time. So *tell* them and *sell* them!

Right now, Janitrol dealers are cashing in on the newest, freshest advertising campaign in the industry. Big, colorful ads in leading national consumer and building trade magazines with big circulation in your market are upgrading demand for quality heating—the kind only Janitrol dealers can provide. Better ask your Janitrol representative about a Janitrol dealership in *your* market!

NEW JANITROL FEC WINTER CONDITIONERS WITH FAMOUS Dura-Tube HEATING HEART!

For City Gases, LP and LP Gas-Air. Compact, clean, efficient. Fit confined spaces. Easy to install—fully serviceable from front. *Feature exclusive Dura-Tube Armored Heating Heart and Amplifire Ribbon Flame Burner* for fast, thrifty heating, new freedom from burn-outs, cracking, rusting! All-steel cabinet with distinctive blue hammertone baked enamel finish has beauty and eye-appeal. Seven sizes from 60,000 to 180,000 Btu/hr. input. Matching summer cooling conditioner available.

... the best years of your business begin with ... **Janitrol**

HEATING . . . COOLING

Janitrol Heating & Air Conditioning Division
Surface Combustion Corporation, Columbus 16, Ohio
In Canada: Moffats, Ltd, Toronto 15

Complete line of gas and oil furnaces, unit heaters, conversion burners, water-cooled and air-cooled summer cooling equipment; combination heating-cooling units

the editor's notebook

(continued)

Edison Co., the year 1956 should show an increase of about 50 percent over the previous peak year of 1955 despite the much larger base against which any gain must be measured. It is estimated that 75,000 units will be sold this year.

Says Industry Needs Less Technical Language

AT THE RECENT midyear meeting of the American Society of Heating and Air-Conditioning Engineers, W. E. Hood of the Carrier Corp. brought up a very important subject that I feel could well be developed. Mr. Hood said that the industry needed a language that customers could understand. He specifically mentioned the method used to express capacity of cooling equipment as the best place to start.

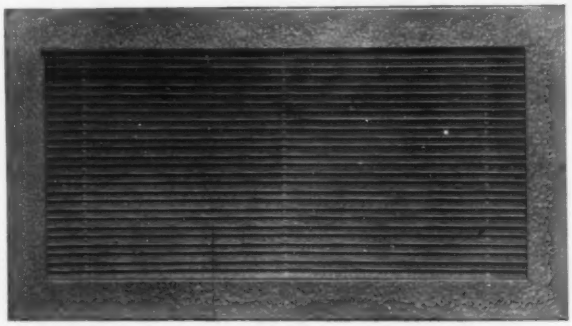
To bring out how important it is for the customer to understand the terms used for summer air conditioning, Mr. Hood said that 125,000 central residential cooling systems were installed in 1955, that he believed the 200,000 mark would be reached in 1956. In 1960, about 540,000 central residential systems could be expected, he said.

The saturation of single family dwelling units with central residential cooling systems stands at about 1.6 percent in 1956, Mr. Hood stated, and predicted that by 1960 this ratio would increase to about 6.3 percent.

More U.S. Homes Using Zone Control

IT'S ALWAYS PLEASANT to learn that one of your pet ideas is gaining favor on a wide scale. So I've been pleased to note, during several recent field trips, that there has been a decided increase in the number of houses using zone control and multiple control systems. Another recent confirmation that the percentage of one-thermostat houses is becoming smaller came from Minneapolis-Honeywell Regulator Co. who, in its recent report to stockholders, noted that the trend to multi-thermostat systems is "accelerating." The reason? One that warm air heating and residential air conditioning dealers have long found to be their best sales slogan — *greater personal comfort.*

NEW! Thin-Core Grilles for Doors—Partitions ¼" to ¾" Thick!



- **CUTS INSTALLATION TIME ½!**
- **EASY TO INSTALL — NO DANGER OF RUINING DOOR!**
- **COMPLETE — NO WOOD MOLDINGS TO ADD!**

A-J

First Grille ever designed specifically for thin doors and partitions. Anyone can install it in just a few minutes time. No close tolerances required . . . almost a half-inch extra on sides for positioning. Telescoping auxiliary frame fastens to grille with posts and screws. Clamps tight. No holes to position. Practically no danger of ruining door. No wood moldings. All steel. Rattle-proof. No vision, with 80% free area. Available with or without frame, all sizes. Gray or tan prime coated, or Hammertone finish in gray or bronze.

ACTUAL SIZE CROSS SECTION

Write For Our Complete

FREE CATALOG

Listing Over 1000 Types and Sizes of Grilles for Every Requirement

A-J MANUFACTURING CO.

Dept. A-8
3601 E. 18th St., Kansas City 27, Mo.

the editor's notebook

(continued)

Urges Greater Use Of Non-nickel Steels

Stainless steel and more stainless steel seems to be the cry of American industry. Production of stainless steel in 1955 was 14 percent greater than in the production record year of 1953, according to T. S. Fitch, president, Washington Steel Corp. The nickel shortage, which will exist for many months yet, prevents an adequate output of nickel bearing grades of stainless steel. Mr. Fitch says that in 1955 over 30 percent of all stainless steel produced was 430 grade, a non-nickel bearing grade. He recommends that non-nickel grades be used where substitutions can be made. If you are in doubt about the advisability of making a substitution, write me and I'll let you know.

Electric, Gas Utilities Push Cooling Sales

COLD WARS — large and small — take place constantly; some are between nations, others between industries. There's just such a "war" taking place between the gas and electric industries. Each

"OUR LOCKFORMER PAID FOR ITSELF THE FIRST WEEK WE HAD IT!"

When you consider that one man and a Lockformer makes more Pittsburgh Locks than 16 men with 8 brakes, it's easy to see how many a Lockformer actually paid for itself out of savings effected on a single job!

If you're not familiar with all of the money-making machines in the complete Lockformer Line, (Lockformers, Cleatformers, Flangers, Super-Speeds, Slitters, Snap Lock Machines and others) write for your free copy of the latest Lockformer Catalog.

Send for your free copy.

THE LOCKFORMER CO.

4615 WEST ROOSEVELT ROAD, CHICAGO 50, ILLINOIS

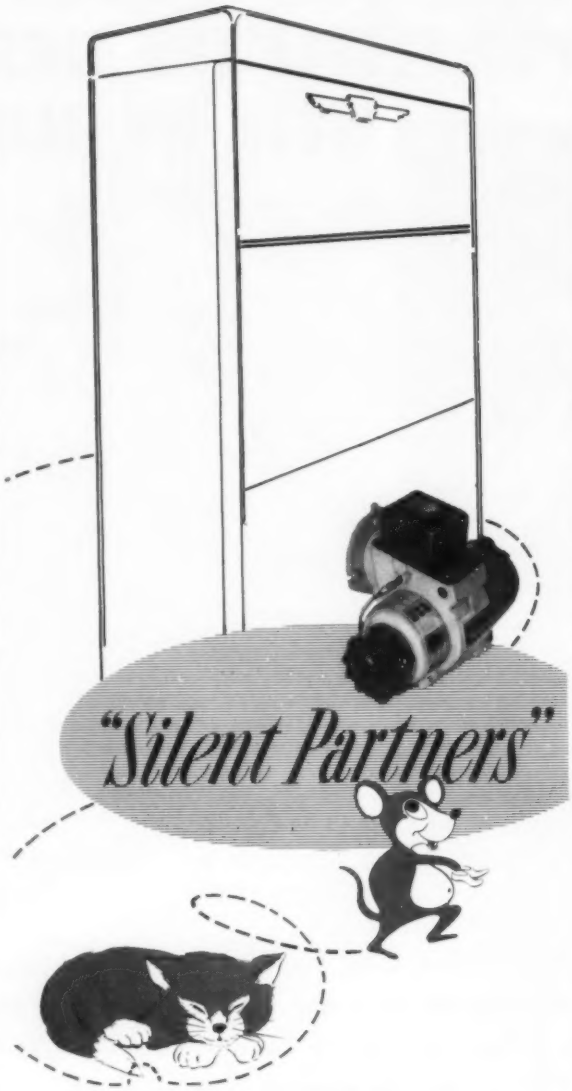
the editor's notebook

(continued)

is making its bid for the summer cooling market to level off its annual demand for loads. At the present time, in most parts of the country the electric industry is making better progress in this direction. However, the gas industry shouldn't be underestimated; there are many plans under way to provide equipment that will use gas to develop summer cooling in residences. The absorption system with its generators has for a long time been performing this service. There are many innovations being made in the use of this equipment that should result in wider acceptance by home owners. Then there is also a gas powered compressor unit being manufactured by five companies for use with the conventional refrigeration system. Some of these gas powered compressors are still in the experimental and testing stages, but information being accumulated indicates that they may be found in common use in a few years.

One of the areas where the cold war is on in earnest is Chicago. Here there are 91 gas fired air conditioning units in use. An extensive sales drive is now in progress by the Peoples Gas Co. James F. Oates, Jr., chairman of the board, says, "The development of gas-fired equipment to cool buildings and homes in the summer provides a very attractive answer to this space heating low load factor problem. We are, therefore, anxious to develop the use of gas to cool in the summer that we may somewhat level off the load throughout the year."

The effect of air conditioning on the summer demand load of the Commonwealth Edison Co. is shown by the records for August 29, 1955, when a peak load of 3,359,000 kilowatts of power was used. This was an increase of 75,000 kilowatts over the peak occurring during the 1954-1955 winter. Willis Gale, chairman, Commonwealth Edison Co., said that the recent increases in customer loads were due primarily to air conditioning installations.



Both mouse and Nu-Way Burner are quietly going about their business . . . with the least amount of disturbance. And that's just typical of Nu-Way performance. There just aren't any unnecessary noise-causing vibrations. Why? Because housing is machined for motor pump alignment to only 0.0015! Special coupling silently absorbs this minute alignment variation. And the sand-cast aluminum alloy housing is stronger, thicker . . . won't warp or twist . . . holds motor and pump in permanent alignment. Ask for Bulletin N-1132. Write Nu-Way Corporation, Dept. AA-856, Rock Island, Illinois.

the editor's notebook

(continued)

Young Men Find SM Trade Attractive

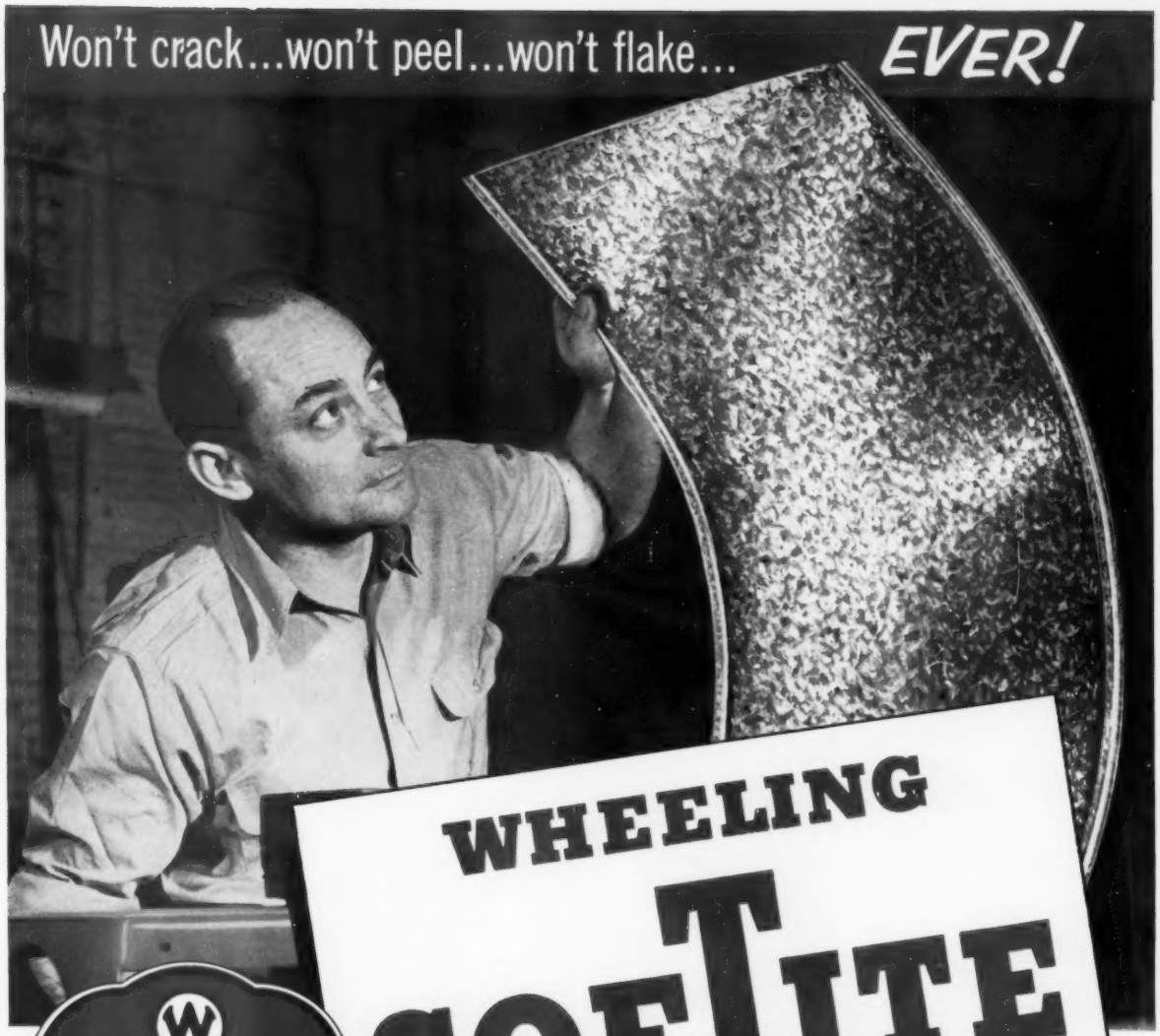
THE GROWTH potential of an industry is often the most important factor considered by young men deciding on which industry they should join. The employment outlook in the sheet metal trade is excellent, and it is no surprise to learn from the Bureau of Apprenticeship of the U.S. Department of Labor that the sheet metal trade was second in the number of apprentices reported in training. First place went to the electrical trade and third place to the ions, and projections all propipefitting trades were in fourth place.

Two other factors given as favorable from the point of view of prospective apprentices are the opportunity for obtaining supervisory positions within the industry and the social benefit plans made available.

Somebody's Been Asleep For Last 20 Years

RECENTLY I received a 12 page brochure prepared by an association representing the electrical industry. The purpose of the publication is to promote the use of electricity consuming equipment. One of the articles reported on a new consumer film slanted toward selling electricity for residential heating. The film, tracing "man's struggle to create warmth for his home,"

Won't crack...won't peel...won't flake... EVER!



WHEELING

SOFTITE®

COP-R-LOY® GALVANIZED SHEETS

Wheeling CORRUGATING COMPANY

This is Wheeling's Richmond warehouse. Other Wheeling warehouses and sales offices are strategically located throughout the country. They all offer immediate delivery of warehouse-stocked Wheeling items such as SOFTITE Cop-R-Loy Galvanized sheets, Galvanized Furnace Pipe, snap lock or closed seam Perimeter Heating or Air Conditioning Pipe, and accessories, Style K Gutters, Square Conductor Pipe, Flashing, Valleys, and fittings.

Here's a galvanized sheet that can really be *worked* with never any fear of chipping or flaking. Why? Because it's ductile and tight coated, made on Wheeling's new continuous galvanizing line. Bead it, seam it, fold it . . . do anything you like . . . this coating will go anywhere, do anything the base metal will!

As a result, Wheeling SOFTITE Cop-R-Loy Galvanized Sheets give tighter joints, surer seams, longer spans. They make every job look better, last longer. Remember SOFTITE next time you order galvanized sheets. That's SOFTITE, made only by Wheeling. Get full details from the Wheeling warehouse or sales office nearest you!

WHEELING CORRUGATING COMPANY, WHEELING, WEST VIRGINIA

Warehouses: Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis. **Sales Offices:** Atlanta, Houston.

the editor's notebook

(continued)

points out that electric heating eliminates such activities as "wood chopping," "coal heaving" and "ash removal" for the modern home owner. Are the film producers so far behind the times that they fail to realize that the warm air heating industry made such practices obsolete years ago?

Catch Phrase Makes Good Selling Tool

THE USE of catch phrases is always a good merchandising tool. I like the way Heating and Air Conditioning Service Co. of Peoria, Ill. makes use of this principle. This dealer makes it a practice to supply ladies attending club meetings with an atrractively cased, purse size nail file. On the reverse side of the file is the suggestion, "A good number to keep on file. Phone 3-7483 for heating and cooling service."

New Artisan Reader Wants Back Issues

JAMES H. MORROW, Morrow Sheet Metal Shop, Tipp City, Ohio, who recently became a subscriber to American Artisan, writes me that he hopes he is able to get all of the back issues for 1956 as he is very interested in the series of articles on heating and air conditioning. I'm pleased to supply the back copies to Mr. Morrow and welcome him to our growing subscriber roll.

Two Types of Heating Dealers

"FITTING FACTS," a monthly bulletin published by the Air Distribution Institute, had this very pertinent quote by a midwestern architect:

"I'd say there are two types of heating and ventilating contractors, the 'merchandiser' and the 'workman.' They both work hard, but the merchandiser makes the money and grows. He does four jobs to the workman's two. He's out selling while the 'workman' is back at his shop. It makes no difference to me as an architect as long as the job gets done right and on time in accordance with my engineer's specifications."

CHAMPION Protects YOUR PROFIT!

Your Champion pipe and fittings stay 100% accurate—from the moment they leave precision fabricating machinery at the factory . . . to the moment you fit one unit snugly into the other on the job! Why? Because Champion units are completely packaged in sturdy cartons. They stay perfect throughout shipping and handling. Cartons are clearly marked for space-saving, systematic storage—and to make sure you always select the right unit and size for an installation.

And remember—the Champion line is *complete.* For any job—for *every* job—make more money with Champion. Order now!

See Your Champion Jobber

AIR DISTRIBUTION INSTITUTE ADI STANDARDIZED FITTINGS MEMBER

CHAMPION

CHAMPION FURNACE PIPE COMPANY
211 Eaton Street — Peoria, Illinois

the editor's notebook

(continued)

Says Do-It-Yourself Strictly for Hobbyists

I BELIEVE Grant Wilson, Inc. has the right approach toward this "do it yourself" fad. The company recently made a mailing of an 8½ × 11 in. hang-up display sign shaped in the form of a scroll. The message, directed to the consumer, says:

We think the
DO IT YOURSELF craze is
great for hobbyists . . .
. . . but "craze" becomes
"crazy" when
inexperienced people tamper
with heating and air
conditioning systems.
Be safer, smarter and money
ahead . . . let a qualified
contractor do it!

"Air Gets in —Somehow"

RECENTLY WE attended a press party at a housing project which featured central cooling. In our tour around the model home we remarked at how laboriously the decorator had covered all the supply registers with furniture, drapes etc. Tracking her down, we pointed out the foolishness of her actions. Her reply — maybe typical of her sex — was, "Oh, well, the air gets in somehow!" 'Nuff said?

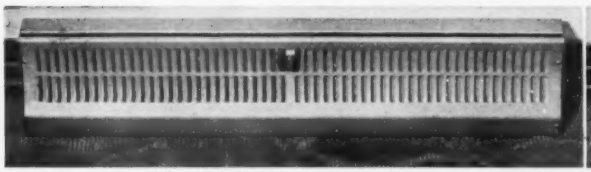
Clyde M. Barnes

EDITOR

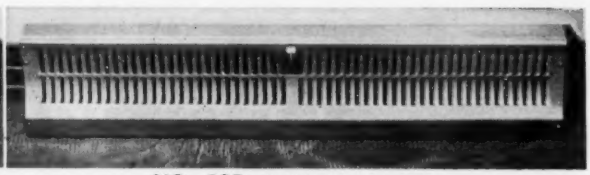
MIDCO

from California to Maine!

THE COMPLETE LINE of
Heating Cooling & Commercial Registers
New Perimeter Baseboard Diffuser

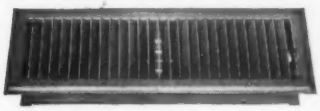


NO. 900 OPEN TOP DIFFUSER



NO. 905 CLOSED TOP DIFFUSER

Delivers more air than any diffuser of similar size!

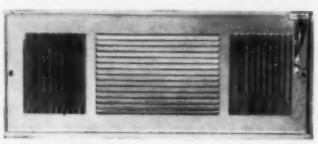


#512
PERIMETER FLOOR REGISTER
Sizes:
2¼ x 10 4 x 10 6 x 10
2¼ x 12 4 x 12 6 x 12
2¼ x 14 4 x 14 6 x 14

NO. 900 OPEN TOP		NO. 905 CLOSED TOP		LIST PRICE BOTH MODELS
LENGTH	FREE AREA Sq. In.	LENGTH	FREE AREA Sq. In.	
17"	30	17"	26	$5.40
24"	43	24"	38	6.85
30"	54	30"	47	7.35
36"	65	36"	56	7.95

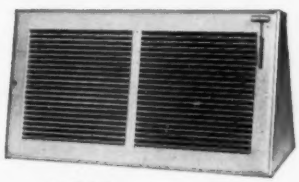
Prices subject to standard Dealer Discounts

Write for Catalogue of our complete line

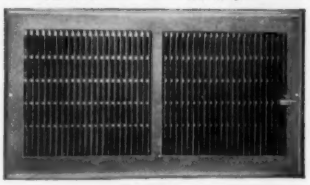


#80
PERIMETER SIDEWALL DIFFUSER
#84
PERIMETER BASEBOARD DIFFUSER
Sizes:
10 x 6 12 x 6
12 x 4 14 x 6

#305
½" VERTICAL FIN REGISTER
Sizes: 6x4 to 30x10



#243
PROJECTION REGISTER
Sizes: 10x6 to 30x8



#30
¼" VERTICAL FIN SIDEWALL
Sizes: 6x4 to 30x10

GET IT FROM YOUR JOBBER

SOME JOBBER OUTLETS STILL OPEN

M I D C O
REGISTER CORPORATION

1059 GRAND AVE. ST. PAUL 5, MINN.

Makers of over 6000 different register units

Famous Name and

FULL LINE

simplify your selling!

Why don't you join American-Standard's dealer profit program?

You can find the right type and size of unit in a jiffy. American-Standard's color-coded speed-indexed catalog is the industry's easiest to use. See, also, American-Standard's powerful new line-up of advertising-merchandising aids.

Warm air heating and air conditioning jobs are easier to plan . . . simpler to sell . . . when you specialize in the installation of *American-Standard* equipment.

Famous name! Synonymous with fine quality and fair prices. You get your order signed faster . . . have more time for more sales.

The American-Standard line is *complete* . . . offers exactly the right unit for every type of installation.

WARM AIR HEATING: Basement, utility, counterflow and horizontal models . . . full range of capacities.

SUMMER AIR CONDITIONING: Add-on units, residential and commercial blower-equipped units, and new outdoor *air-cooled* units with vertical, counterflow, horizontal air-flow or blower-equipped evaporators.

YEAR'ROUND AIR CONDITIONING: Eleven heating-cooling size combinations equipped for gas or oil-fired heating. Electrostatic air filtering units for every size and type of application. Just pick up your phone—your nearby American-Standard Air Conditioning Distributor is ready to give you fast service. Call him right now for full details about—

YEAR-ROUND *Air-Conditioning*

BY AMERICAN-STANDARD

EVERYTHING *for air conditioned comfort*

Warm Air Heating
Summer Cooling
Year 'round Units
Electrostatic Air Filters

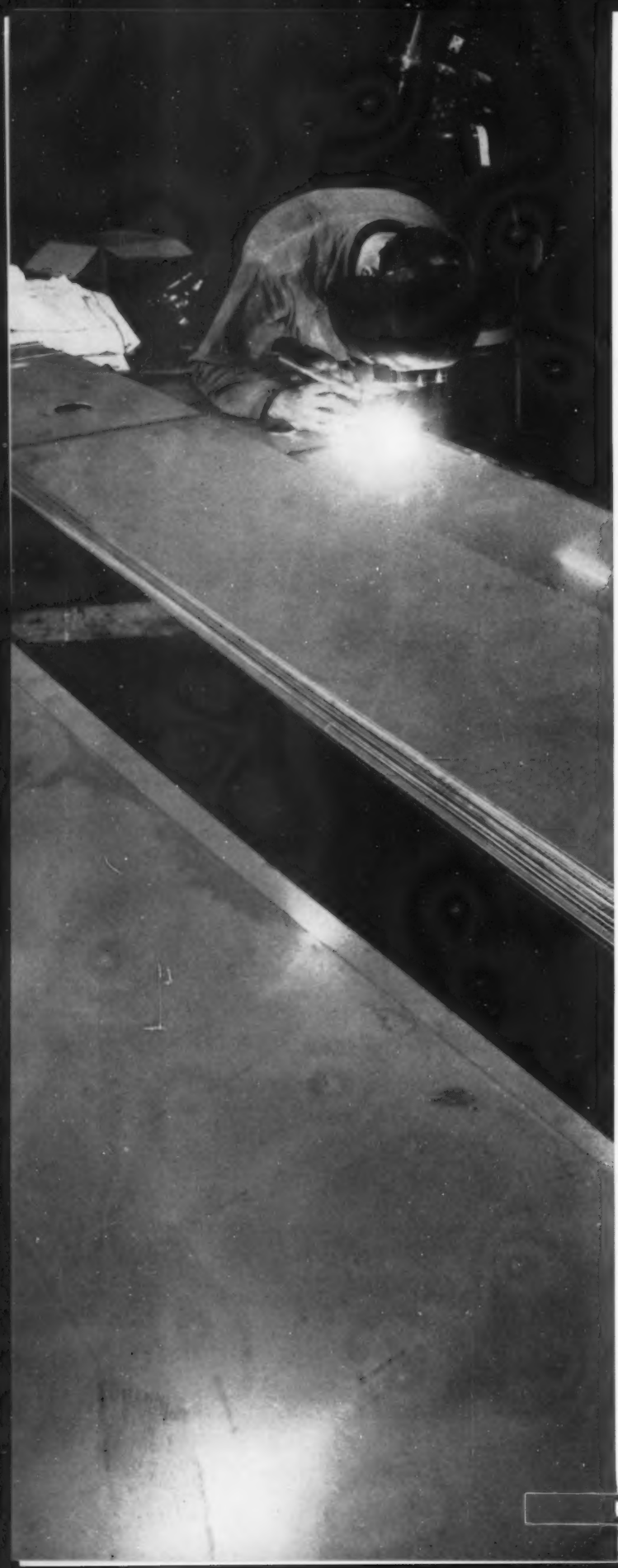
American-Standard
AIR HEATING
AIR COOLING
AIR CONDITIONING DIVISION

AMERICAN-Standard

AIR CONDITIONING DIVISION

ELYRIA, OHIO

American Radiator & Standard Sanitary Corporation



Stainless Steel
welding information:

how to get strong welds in thin sections

Thin Stainless Steel sections can be easily welded without flux if you use an inert gas-shielded electric arc procedure. The welder in the picture is using an argon atmosphere. It shields the welding zone from slag impurities, eliminates fumes and spatter, and produces a clean, dense weld.

The process is especially suited for USS Stainless Steel grades 301, 302, 303, 305, 316, 317, 321, 347, and 410, in thicknesses from .025 to .25 inch. The tungsten electrode used is not consumed, and it will not pick up carbon. If filler metal is needed, it can be the same as the parent metal. There is little distortion, even in thin sections, when properly jigged.

If welding rod is used, it should be of the proper composition, and all the usual joints can be made easily. Either DC or AC current can be used, but direct current gives greater penetration and speed. Surfaces should be clean, and you should use a back-up bar, or a mixture of Stainless Steel flux and shellac on the under side.

To develop the very maximum strength and corrosion resistance, the welds should be annealed—although this is not always necessary. The subject is covered fully in our comprehensive Stainless Steel "Fabrication" book. Write on your company letterhead for your copy to: United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

If you'd like, we'll have a representative call and discuss your special shop problems.

UNITED STATES STEEL CORPORATION, PITTSBURGH
AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS
PIPE • TUBES • WIRE • SPECIAL SECTIONS

UNITED STATES STEEL

2, 3 or 5 Ton Air Cooled Condensing Unit is shown connected to either "A"-type, Plenum, or Flat-type, Duct, Cooling Coil.
Counterflow 2 or 3 Ton Year 'Round Unit is either Air Cooled or Water Cooled, burns either Gas or Oil.
5 Ton Water Cooled Year 'Round Unit Burns either Gas or Oil.
2 or 3 Ton Year 'Round Unit is either Air Cooled or Water Cooled, burns either Gas or Oil.
3 or 5 Ton Water Cooled Add-On Summer Air Conditioning Unit.
Luxaire

The BIGGEST Sales-Making Profit-Making Line in the Business!

Basement Type Winter Air Conditioner burns either Gas or Oil.
Counterflow Winter Air Conditioner burns either Gas or Oil.
Incinerator is available with 3 Gas Fired combinations and without Burner.
Gravity Furnace burns either Gas or Oil.
Utility Room Type Winter Air Conditioner Burns either Gas or Oil.
5 sizes of Gas Unit Heater cover complete range of demand.
Horizontal Furnace is available in 4 Gas Fired sizes and 4 Oil Fired sizes.

There's No End to Your Profit Opportunity with Luxaire . . .

The big "S", above, stands for Sell — because it is easier to sell Luxaire than to sell against it!

There is only one Luxaire line, complete in every respect. Every Luxaire unit is competitive in price. There are no specials or seconds, just first quality all the way through!

You will profit from Luxaire's reputation for trouble-free deluxe units at down-to-earth prices. This reputation is established with your builder, architect and homeowner customers. It makes Luxaire easier for you to sell!

You will profit even more from Luxaire's reputation for easier installations and excellent performance. When you standardize on Luxaire, you will find that your time-on-the-job is less, and your service calls are minimum.

Start your heating season right, right now. Call your Luxaire jobber for catalogs and for new, lower prices on certain units!

THE Luxaire® C. A. OLSEN MANUFACTURING COMPANY • • ELYRIA, OHIO

HEATING & AIR CONDITIONING UNITS

Describe Usage of Early Indirect Evaporative Cooler

THE WIDE USAGE in Arizona and Texas of water to reduce air temperatures without humidifying it through the use of indirect evaporative coolers is discussed in the first part of a paper by John R. Watt, associate professor of mechanical engineering and R. A. Bacon, assistant professor of mechanical engiing, both of the University of Texas, the American Society of Heating and Air-Conditioning Engineers reports.

Typical cooling installations of this type, in use 20 years ago, are described and their performance is outlined in the paper. The second part of the paper describes five indirect evaporative coolers built and tested at the University of Texas during 1952 and 1953. This report includes capacity and other performance data about each of the five units.

Ways to Merchandise AC Equipment Told at Meeting

MANUFACTURERS OF year 'round residential air conditioning equipment, lenders and top officials of the Federal Housing Administration and the Veterans Administration, and a representative group of builders were participants in an air conditioning merchandising conference held at the National Housing Center, Washington, D.C. on July 30. Experiences of both manufacturers and home builders at the Austin Air Conditioned Village project were reviewed and steps taken to utilize the information obtained from the two-year-old research projects which demonstrated that central air conditioning systems are both practical and economical for residential applications. The conference accomplished the first step in working out a plan whereby the use of central air conditioning systems in new home construction should continue to increase at a fast rate.

Four main areas covered in the conference dealt with problems that when solved will help sell more year 'round air conditioning systems. These subjects were: consumer interest in air conditioning, merchandising air conditioned houses, improving design of equipment and installation procedures and better financing for air conditioned houses.

R. G. Hughes, director, National Association of Home Builders reported that there is already a widespread desire on the part of the public to own air conditioned homes. To develop this interest further he recommended that a public educational

(*Continued on page* 24)

Record Prosperity Forecast For Nation During 1956-57

THE PRESENT YEAR SHOULD be the biggest in history in terms of production, employment and earnings, and the prosperity should carry over into 1957, Dr. Emerson P. Schmidt, director of the National Chamber of Commerce's Economic Research Dept. said recently.

And he doesn't believe President Eisenhower's decision to run for reelection or to step aside will have any effect in the strength of the economy. Dr. Schmidt's announcement came following study of summaries submitted by executives of 14 trade associations and a banker covering the prospects for the next six months in the fields of agriculture and food, construction, distribution and finance.

Dr. Schmidt pointed to the high expenditures going for plant and equipment additions, which is expected to continue throughout the year 1957.

"We have never in our history had a serious general recession as long as new plant and equipment purchases have held up," he said.

Dr. Schmidt disagreed with one of the speakers, Justin Bowersock, executive vice president, Union Trust Co., on the so-called "tight money" policy of the Federal Reserve Board. Mr. Bowersock said the board's decision to raise the discount rate was "untimely and may prove to have been unwise."

But Dr. Schmidt said that if a looser credit policy had been followed the cost of living would be much higher today.

Heating Research Program By BRAB Gets Underway

A TWO-DAY MEETING, which covered such technical projects as moisture, heating and insulation, site planning, construction and structure, was held recently at the National Housing Center by a special committee of the Building Research Advisory Board. The meetings were held at the request of the Federal Housing Administration.

For each project, the committee prepared a statement of the problem, proposed research method, research facility, magnitude of the study in cost and time, and remarks relating to existing data and knowledge, current or pending research, and qualifying or illuminating statements. A report of the committee's findings and recommendations will be forwarded shortly to the FHA.

HEATING CONTROLS

General Electric's two new home heating MODERNIZATION KITS offer you two ways to EXTRA PROFITS—

1. Cash in on the big market for changing obsolete 3-wire systems to 2-wire systems

2. Pile up profits by introducing and selling a popularly priced Outdoor Control System.

TURN PAGE TO LEARN HOW YOU CAN PROFIT

HEATING CONTROLS

M3

MODERNIZATION KIT...

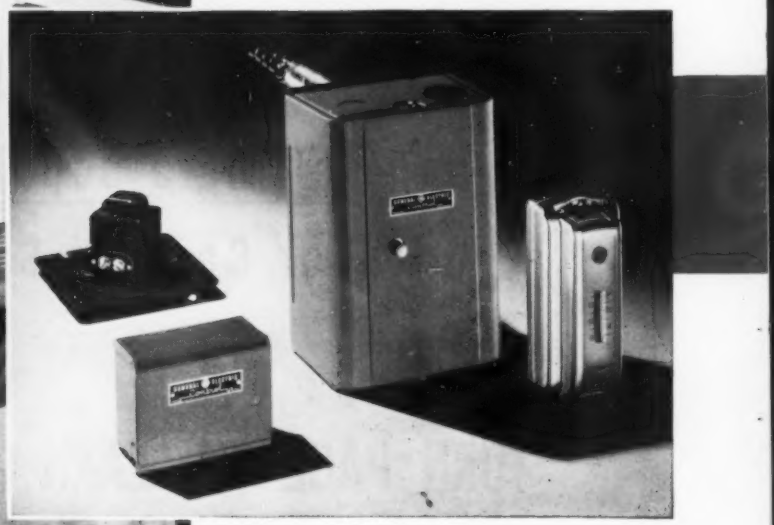
Announcing first, *practical low-cost,* indoor-outdoor temperature control system

Here's your chance to tap a vast market **that's never been touched**—and with something completely different: General Electric's new Outdoor Control System. This system packaged into General Electric's M3 kit simplifies conversion from 3-wire systems to 2-wire systems and—

IT'S *BUILT* TO SELL—The system consists of just four simple pieces—outdoor thermostat, indoor thermostat, transformer, and stack switch. The outdoor thermostat has no moving parts to cause maintenance problems—no elaborate electronic tubes. And you can install the system in less than an hour.

IT'S *PRICED* TO SELL—Compared to other types, the cost of a new G-E system is amazingly low. Now you can offer the advantages of indoor-outdoor heating control to everyone who lives in a low- or medium-priced home!

IT'S *PROMOTED* TO SELL—To make sure that the whole wide-open market hears about the new system, General Electric is going to **your** customers with magazine advertising, bulletins and flyers—Your customers are going to be asking you about this revolutionary, new G-E temperature control, and you'll want the system in stock. Promote these features: constant, steady room temperature, healthier living conditions, reduced fuel costs, no thermostat "jiggling," simplicity of operation. Act today. This new General Electric kit is a sure-fire profit item.



M2

MODERNIZATION KIT... Stack Switch and indoor thermostat team up to simplify your control sales

Here's another opportunity for you to make extra profits during the coming months: General Electric offers a new M2 Modernization Kit which consists of thermostat and stack switch. Use this packaged system to replace your customer's obsolete, inadequate 3-wire heating control system. Call your distributor today. Ask him how much money **you** can save by buying the M2 Modernization Kit under G.E.'s exchange plan. Your nearest distributor's name is listed on the next page.

Sell the package in terms of dependability and constant comfort. G-E thermostat is ultra-modern in appearance; features finger-tip adjustment. Element is detachable for protection during installation—installation is fast and easy. Stack switch features: sturdy construction, extreme sensitivity to temperature change. Both of these units are designed and built for long-time customer satisfaction. With them, you'll get far fewer nuisance complaints—far fewer call-backs.

LET YOUR GENERAL ELECTRIC DISTRIBUTOR TELL YOU HOW YOU CAN

SAVE UP TO $19.00*

Yes, call your nearest General Electric distributor, who is listed on the next page. He will be glad to tell you how you can save up to $19.00* on the M2 kit when you purchase under the General Electric exchange plan.

*Figured in terms of suggested resale prices.

GENERAL ELECTRIC

TURN THE PAGE FOR THE NAME OF YOUR NEAREST G-E DISTRIBUTOR

HEATING CONTROLS

ALBANY, N. Y.
Cert. Fuel Unit Service Co.
Colonial Heating Equip. Co.
ALLENTOWN, PA.
Sid Harvey, Inc.
ALPENA, MICH.
Huron Heating Supply Co.
ARLINGTON, VA.
Sid Harvey, Inc.
AUBURN, N. Y.
Rood Utilities, Inc.
AURORA, ILL.
Scott Wood & Metal, Inc.
BALTIMORE, MD.
Sid Harvey, Inc.
R. E. Michel Co., Inc.
BATTLE CREEK, MICH.
Columbia Metal Service
BLOOMINGTON, ILL.
MaGirl Foundry & Furnace Co.
BOGOTA, N. J.
Universal Engineering Co.
BOISE, IDAHO
Oil Burner Pts. & Sup. Co.
BOSTON, MASS. Area
Cronin Supply Co.
F. W. Foley Co.
Sid Harvey, Inc.
Metro Supply Co.
Mattapan Supply Co.
BROCKTON, MASS.
R. H. Austin Co., Inc.
BRIDGEPORT, CONN.
Sid Harvey, Inc.
BUFFALO, N. Y.
Rochester Oil Burning System
BURLINGTON, N. C.
Alley & Rader Services
CALDWELL, N. J.
Central States Supply Co.
CHARLOTTE, N. C.
Burner Supply Corp.
CHESTER, PA.
Hepco, Inc.
CHICAGO, ILL.
Robert Barclay, Inc.
Place Brothers
C. E. Sundberg Co.
CINCINNATI, OHIO
F. E. Winstel Co.
CLEVELAND, OHIO
Ohio Pump Service Co.
COLUMBUS, OHIO
Columbus Auto. Sprayer Co.
DAVENPORT, IOWA
Republic Electric Co.
DECATUR, GA.
Rayheat Equip. Co.
DES MOINES, IOWA
Dennis Supply Co.
Heating Wholesalers Co.
Ace Supply Co.
DETROIT, MICH.
Hydraulics Pump & Repair
National Furnace & Sheet Metal Co.
Pelton Distributing Co.
Wholesale Oil & Gas Sup. Co.
EDGEWATER, N. J.
Kogan & Company
ELIZABETH, N. J.
Cert. Fuel Unit Service Co.
EVANSVILLE, IND.
Swanson-Nunn Elec. Co.
FITCHBURG, MASS.
Heat Inc.
FLINT, MICH.
Moore Bros. Elec. Co.
FORT WAYNE, IND.
Tri-State Htg. Supply, Inc.
FREDERICK, MD.
Frederick Trading Co.
GARY, IND.
G. W. Berkheimer Co., Inc.
GRAND RAPIDS, MICH.
Mich. Auto Htg. Equip. Co., Inc.
GREEN BAY, WISC.
Beemster Elec. Co.
HARRISBURG, PA.
Fuel Savers, Inc.
HARTFORD, CONN.
Sid Harvey, Inc.
HAWTHORNE, N. J.
Univ. Engineering Co.
INDIANAPOLIS, IND.
G. W. Berkheimer Co., Inc.
JACKSON, MICH.
Leo A. Tilford, Inc.
KALAMAZOO, MICH.
Associated Supply Co.
KANSAS CITY, MO.
Chas. D. Jones Co., Inc.
Superior Supply Co.
LANSING, MICH.
Contractors Sy. Co.
LAWRENCE, MASS.
Finberg Sy. Co.
LOUISVILLE, KY.
Marine Elec. Co.
MADISON, WISC.
Wisconsin Htg. Equip.
MALDEN, MASS.
Oil Heat. Dist. Inc.
MERCHANTSVILLE, N. J.
Cert. Fuel Unit Service
Sid Harvey, Inc.
MILWAUKEE, WISC.
Refrigeration Parts Co., Inc.
Heating Parts Exch., Inc.
MINNEAPOLIS, MINN.
Wholesale Htg. & Sup. Co.
MODESTO, CALIF.
Slakely Bros. Inc.
MORRISTOWN, N. J.
Amber Oil Burner Sup. Co.
NEW HAVEN, CONN.
A. R. Webber Co., Inc.
NEWARK, N. J.
Cert. Fuel Unit Service Co.
Sid Harvey, Inc.
Winston Company
NEW YORK CITY, N. Y. Area
Sid Harvey, Inc.
Michael & Goldberg Plbg. & Htg. Inc.
Radiant Burner Supply Corp.
Atlantic Burner Supply Co., Inc.
NORFOLK, VA.
Sid Harvey, Inc.
NUTLEY, N. J.
Nutley Oil Burner Supply & Tool Co.
OAKLAND, CALIF.
Slakely Bros., Inc.
OKLAHOMA CITY, OKLA.
Waugh Bros. Sup. Co.
OMAHA, NEBR.
Dennis Supply Co.
ORLANDO, FLA.
Industrial Equip. Co.
PASSAIC, N. J.
Sid Harvey, Inc.
PEORIA, ILL.
Htg. Supply & Service Co.
PHILADELPHIA, PA.
Cert. Fuel Unit Service Co.
Girard Supply Corp.
Sid Harvey, Inc.
PORTLAND, ORE.
McPherson Furnace & Supply Co.
PROVIDENCE, R. I.
Rhode Island Fuel Pump Service Co., Inc.
Sid Harvey, Inc.
QUINCY, ILL.
McDonald Stove Co.
READING, PA.
Sid Harvey, Inc.
RICHMOND, VA.
R. E. Michel Co., Inc.
Refrigeration Supply Co.
ROANOKE, VA.
Southern Refrigeration Corp.
ROCHESTER, N. Y.
Rochester Oil Burning System
ROCKFORD, ILL.
Oil Heat Parts
SACRAMENTO, CALIF.
Slakely Bros., Inc.
SAN JOSE, CALIF.
Slakely Bros., Inc.
SAGINAW, MICH.
Reichle Supply Co.
SCHENECTADY, N. Y.
LeValley McLeod Inc.
SCRANTON, PA.
Chapman Supply
SEATTLE, WASH.
McPherson Furnace & Equip. Co.
SIOUX CITY, IOWA
Dennis Supply Co.
Heating Wholesalers Co.
SOUTH BEND, IND.
Koontz-Wagner Elec. Co.
STERLING, ILL.
Crescent Elec. Sup. Co.
SPOKANE, WASH.
McPherson Furnace & Equip. Co.
SPRINGFIELD, MASS.
Gray Supply Co.
STELTON, N. J.
Sid Harvey, Inc.
SYRACUSE, N. Y.
Oil Burner Supply Co.
THOMASVILLE, GA.
Industrial Equipment Co.
TOLEDO, OHIO
Fry Furnace Co.
TRAPPE, PA.
Jacob H. Bowers Co.
TRENTON, N. J.
Lincoln Supply Co.
TROY, N. Y.
Century Supply Co.
UNION CITY, N. J.
Sid Harvey, Inc.
UPPER DARBY, PA.
Tempco, Inc.
UTICA, N. Y.
Rood Utilities Co.
VINELAND, N. J.
Hepco, Inc.
WASHINGTON, D. C.
Sid Harvey, Inc.
R. E. Michel Co., Inc.
WATERLOO, IOWA
Heating & Cooling Supply Co.
Heating Wholesalers Co.
WICHITA, KAN.
Superior Sup. Co.
WILMINGTON, DEL.
Greenburg Supply Co.
Sid Harvey, Inc.
WOODBURY, N. J.
Sid Harvey, Inc.
WORCESTER, MASS.
Sid Harvey, Inc.
John W. Walsh, Inc.
YORK, PA.
Sid Harvey, Inc.
ZION, ILL.
Mid-Way Supply Co.

Your best assurance of COMPLETE customer satisfaction
General Electric's COMPLETE line of heating controls

GENERAL ELECTRIC

No. 46 DIFFUSAIRE

A NEW PERIMETER DIFFUSER PAR EXCELLENCE FOR BASE BOARD INSTALLATION

Base projection 2¾"
Height of back 4½"

Available in 2-foot and 4-foot lengths for installation as individual units or continuous strips in multiples of 2 or 4 ft.

Culmination of years of research and development of diffusers of this type. It combines new and advantageous features, attractive appearance and unmatched performance. Note the outstanding superiorities high lighted below, then inspect this remarkable diffuser at your H&C Jobber. We believe you will agree it's the finest diffuser of its type money will buy.

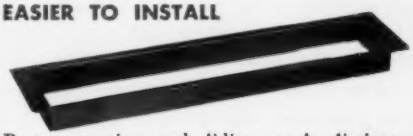
BALANCING STOP provides positive and easy means of balancing at diffusaire face.

AIRFOIL VALVE — VERY LOW RESISTANCE
The curved valve, its high mounting on the back wall of the diffuser and the shape of the diffuser's front panel provide a nozzle-like opening scientifically assuring a very minimum of resistance.

EQUALIZED AIR DISTRIBUTION from end to end of the diffuser and CONSTANT AIR VELOCITY PATTERN REGARDLESS OF VOLUME is accomplished by the high mounting of the valve and its opening at the air discharge point. Important in heating and of even greater value in achieving

MORE EFFECTIVE COOLING.

EASIER TO INSTALL



Bottom openings and sliding panels eliminate cutting, and with the exclusive H&C FLEXOFLANGE (furnished at no extra cost) there's no folding over of the boot end. With the boot end flush with the floor and diffuser in place, the expansible FLEXOFLANGE is inserted in the opening and nailed through boot at the ends . . . for the tightest, cleanest and quickest connection possible. BY ALL MEANS INSPECT THIS NEW DIFFUSER AT YOUR H&C JOBBER.

HART & COOLEY MANUFACTURING CO. 500 EAST EIGHTH ST., HOLLAND, MICHIGAN
IN CANADA: HART & COOLEY MANUFACTURING CO., FORT ERIE, ONTARIO

(*Continued from page* 18)

Better Business Bureau Hits Window Cooler Ad Claims

ADVERTISING CLAIMS THAT the 7½ amp window summer air conditioner doesn't need special wiring, "just plug it in," are false in many instances, the National Better Business Bureau, Inc., states.

Much of the consumer advertising claims without qualifications that the 7½ amp unit does not need special wiring, the bureau says, and this is true in some cases, but there are also many locations where existing circuits are already taxed to capacity, so that the addition of even a 7½ amp window summer air conditioner may cause overloading and possible risk of an electrical shock or fire.

The bureau also added that national advertising should not ignore the existence of local laws. The bureau pointed to New York City where the electrical code requires that each cooling unit be on a separate or branch appliance circuit; that No. 12 wire rather than No. 14 be used and that a receptacle for proper grounding be provided.

Chicago was pointed to as having a similar grounding law. Some 2000 installers, retailers, distributors and manufacturers were advised this year that there must be sufficient electrical facilities to accommodate all current consuming devices, and that all fixed metal enclosed electrical equipment shall be grounded along with all portable electrical equipment within reach. "Therefore," the memorandum from Chicago continued, "it is mandatory that all such portable equipment, for safety's sake, should be provided with three conductor cord and attachment cord and attachment plug caps of the proper design."

The bureau also states that in Dallas either a ground wire or the use of a three pronged plug is required. Since most locations are not equipped with wall receptacles to accommodate three prong plugs, it would be necessary to provide them before "just plugging in" a 7½ amp window summer air conditioner, the bureau added.

In conclusion, the Better Business Bureau recommended that advertisers not make broad or general claims implying that alterations are not necessary in installations and that ad claims be qualified to give recognition to existing laws in areas where the advertising is directed.

Apprenticeships Show Increase

THE YOUTH OF THE COUNTRY is looking more and more toward the skilled trades as a career, the U.S. Department of Labor's Bureau of Apprenticeship study shows.

The study shows that 16,000 more apprentices registered with the Bureau of Aprenticeship or state apprenticeship agencies in the first quarter of 1956 than for the same period a year ago.

The building trades are training more apprentices than are the graphic arts and service industries. The sheet metal trade is reported as fourth highest of all those polled, the study reports.

The report also shows the number of registered apprentices with the number of craftsmen employed in different parts of the country. The greatest number of apprentices per 1000 craftsmen were reported in the District of Columbia, 62; Montana, 42; Minnesota, 33; Connecticut, 32; and Arizona and Wisconsin, 31 each.

A large share of the credit for this upward trend in gaining apprentices goes to management and labor in developing training programs in their locality, the report states.

Aluminum Association Adopts Standards

THE ALUMINUM ASSOCIATION is adopting American Standard Association's preferred thicknesses for uncoated thin flat sheets as set forth in ASA B32.1-1952 in a cooperative effort to help the industries it serves.

The division's action, according to Donald M. White, association secretary, applies to standard mill sizes for all aluminum sheet alloys, which are sold in large volume through warehouses. The new sheet thickness standards went into effect July 1, Mr. White said.

Merchandising of AC Equipment Discussed

(*Continued from page* 18)

program be started and to play up initial installation and operating costs that could be expected by the home owner.

The merchandising plans laid at the conference called for close cooperation between builder, dealer and manufacturer to promote the use of cooling equipment at the local level.

The findings at the Austin experimental project, plus independent studies made by a number of manufacturers on performance and its relation to design of equipment and installation procedures were discussed. These findings and their importance to manufacturers, builders, dealers, lenders and the ultimate home owner are to be pooled to achieve better equipment at lower cost to aid merchandising.

Realizing that merchandising air conditioning equipment is closely related to mortgage financing, the conference discussed ways by which it is hoped that air conditioned homes will be given higher evaluations by lenders. It was pointed out that FHA and VA requirements could be revised around the data now in the hands of the manufacturers and builders.

When Good Sellers Get Together!

RICHMOND
BUDGETEERS

WINTER AIR CONDITIONERS GAS- AND OIL-FIRED MODELS

Here's a line-up of Richmond's Budgeteer Series—engineered to meet *all* customer demands for performance and economy. Gas or oil fired, with or without extended jackets, styles and sizes for all installation requirements from 70,000 to 140,000, BTU/Hr. capacities. You'll find just the unit that means customer satisfaction, generates word-of-mouth praise that leads to added sales.

WRITE FOR FREE TECHNICAL BULLETINS!

GAS OIL EXTENDED JACKET

HIGH BOY For a variety of installations including small spaces such as closets or utility rooms. With or without extended jacket.

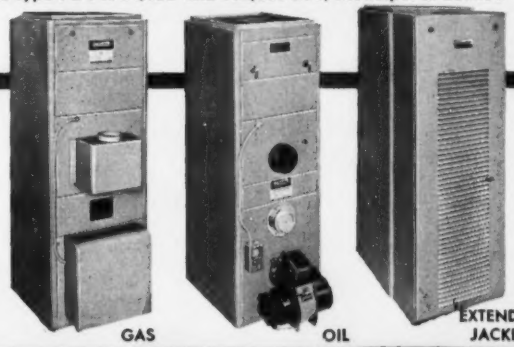
GAS: Type VG-36: 70,000, 90,000, 110,000 and 130,000 BTU/Hr. input. A.G.A. approved

OIL: Type VO-71: 84,000 and 112,000 BTU/Hr. output at bonnet.

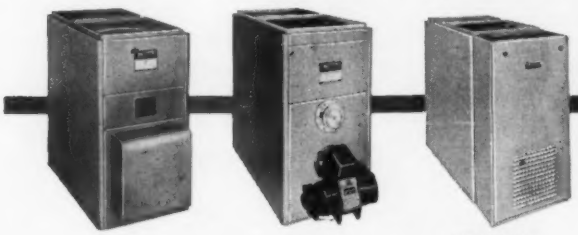
COUNTERFLOW For basement-less, slab type homes or any perimeter system. May be installed in closet or utility room. With or without extended jacket.

GAS: Type CG-46: 70,000, 90,000 and 110,000 BTU/Hr. input. A.G.A. approved

OIL: Type CO-81: 84,000 and 112,000 BTU/Hr. output at bonnet.



GAS OIL EXTENDED JACKET



GAS OIL EXTENDED JACKET

LOW BOY For a wide range of installations including full or half basement. With or without extended jacket.

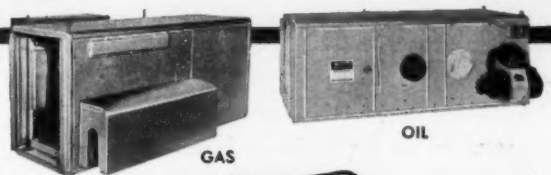
GAS: Type LG-16: 70,000, 90,000 and 110,000 BTU/Hr. input. A.G.A. approved

OIL: Type LO-61: 84,000 and 112,000 BTU/Hr. output at bonnet.

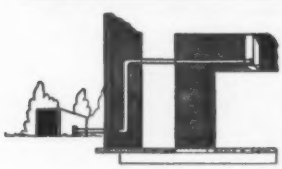
SUSPENDED-HORIZONTAL For attics, crawl spaces or suspension in utility rooms and basements.

GAS: Type AG-56: 60,000, 80,000, 100,000, 120,000 and 140,000 BTU/Hr. input. A.G.A. approved

OIL: Type AO-91: 84,000 and 112,000 BTU/Hr. output at bonnet.



GAS OIL



RICHMOND WEATHER-AIRE CENTRAL COOLING

Air- and Water-Cooled, enclosed High Boy or evaporator type units available for use with all Richmond Budgeteers.

SHOWN: Evaporative cooler installed in warm air supply duct.

RICHMOND HEATING · COOLING

RICHMOND

PLUMBING FIXTURES DIVISION

Rheem Manufacturing Company
16 Pearl Street, Metuchen, N. J.

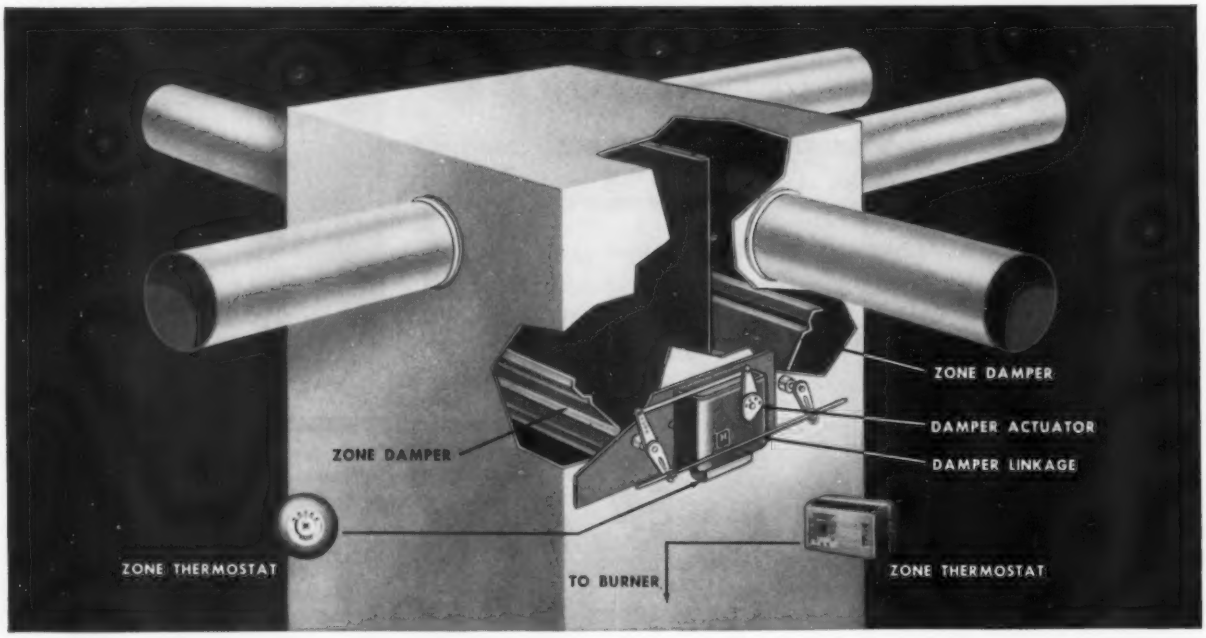
Look to ***RICHMOND*** *for a complete line—automatic heating—central summer cooling units.*

Other Rheem Products: WATER HEATERS • WATER SOFTENERS • WEDGEWOOD GAS RANGES AND CLOTHES DRYERS • STEEL AND FIBRE CONTAINERS

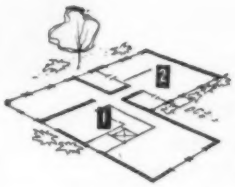
Zone Control with

No duct changes!

Honeywell's revolutionary 2-Zone Balancing System with only one motor and plenum splitter—provides constant air flow through furnace or cooling coil



ABOVE you see a split plenum burner that uses the Honeywell 2-Zone Balancing System. *One* motor controls the dampers to *two* zones. No additional duct work is necessary, only a plenum splitter. A simple linkage arrangement does the trick.



By gradually decreasing the flow of air in one zone while increasing it in the other, the dampers provide an automatic balancing system for both zones. One thermostat controls the heating or cooling unit only, the other controls the damper motor and heating or cooling unit.

Split-level homes, homes with large glass areas, with basement recreation space—almost all types of homes in fact—lend themselves to at least a two-zone system. And the Honeywell Single Motor System is made-to-order for *low-cost* two-zone control.

For complete information on the new Honeywell warm air zone control system, or details on wet heat zoning equipment, call or wire the local Honeywell office nearest you. Or write directly to Honeywell, Dept. AA-8-182, Minneapolis 8, Minnesota.

Honeywell's Durable Modulating Motor

The M829A is designed specially for low-cost zone control. And now you can offer it as part of a simple, *single-motor*, 2-Zone Balancing System that brings the price below that of conventional two-motor "on-off" systems.

The M829A is noiseless and has no gears or pumps to get out of order. It can be mounted in any position to provide a *measured* amount of heating or cooling through the duct. It is easy to install—easy to wire.

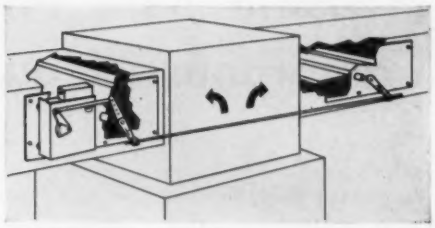
Your choice of these thermostats

Clock Thermostat

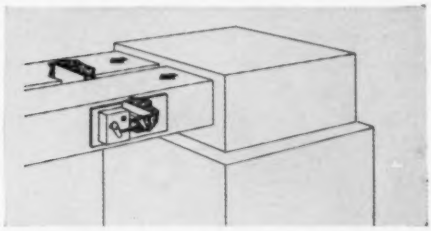
Honeywell Round

New simplified wiring panel for heating—cooling systems.

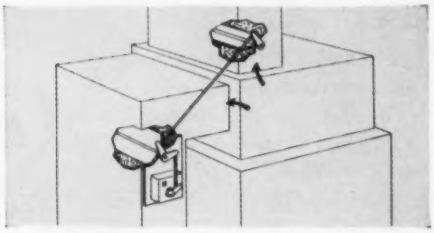
Honeywell's Single Motor System is easily installed on any type of new home or existing warm air system. Here are some typical installations!



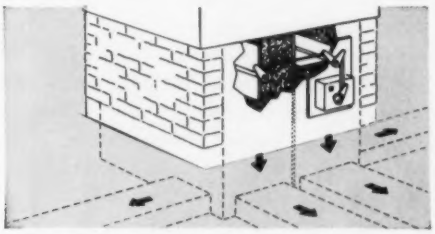
T-Duct system utilizing one motor and two dampers is shown above.



Parallel duct system shows both dampers on a single shaft.



Split-level home can use this duct damper and linkage arrangement.



Counterflow furnace can utilize this arrangement for forced warm air perimeter heating.

For heating and cooling

MINNEAPOLIS
Honeywell

112 offices across the nation **Zone Control**

WASHINGTON LETTER

House-Senate Passes '56 Compromise Housing Bill

THE 1956 FEDERAL housing bill received an 11th hour rescue from Congress on July 26 when a House-Senate conference committee passed a compromise bill, which provides for 35,000 public housing units a year and extends two federal mortgage insurance programs.

Receiving three year extensions, dating from Sept. 30, are the FHA Title VIII Capehart military housing bill, and FHA Title I home improvement insurance program.

The House rules committee had blocked action on the original housing bill, which called for the building of 180,000 units during the next three years — 50,000 public housing units annually for the next three years, plus another 10,000 units for the housing of elderly people.

Had the joint conference committee failed to come up with a compromise solution to the bill, both of the renewed federal mortgage insurance programs would have expired on Sept. 30.

Basic FHA insurance authorizations for its Title II 1-4 family housing program are ample enough to continue until June, 1957.

Defends Federal Credit Controls

THE FEDERAL RESERVE'S policy of credit restraint was defended recently by John S. Coleman, National Chamber of Commerce of the United States president.

Addressing the Wisconsin Bankers Association in Milwaukee, Mr. Coleman said: "I would suggest that credit restraint was called for after mid-1955 and is called for presently, although perhaps not so strict as in months past." Mr. Coleman pointed out that credit restraint does not mean choking off credit altogether.

There are periods in which the government must restrain credit, Mr. Coleman pointed out, and they coincide with "very substantial increases in the volume of credit granted and outstanding."

"I was dismayed and disheartened by the number of businessmen who criticized the restrictiveness of monetary and fiscal policy," said Mr. Coleman.

"However, virtually all businessmen would agree, I believe, that maintenance of a reasonably stable value for the dollar should be one of the basic goals of economic growth."

Oil Industry Sees '56 as Biggest Year

NEARLY 60 PERCENT of the entire population of the United States is served by automatic oil heating at work or in the home and the oil industry expects to add 700,000 new users during 1956 for "its biggest year in history," it was stated recently by Fred E. Weldon, general chairman of the 34th annual Oil-Heat Institute's convention.

A total of 12,303 manufacturers, wholesalers and dealers attended the convention and exposition.

Mr. Weldon pointed to the growth of oil-fired heating equipment, comparing the 8,000,000 homeowners using oil-fired equipment through 1955 to the 6,000,000 users five years ago and the 3,000,000 10 years ago.

(*Continued on page* 34)

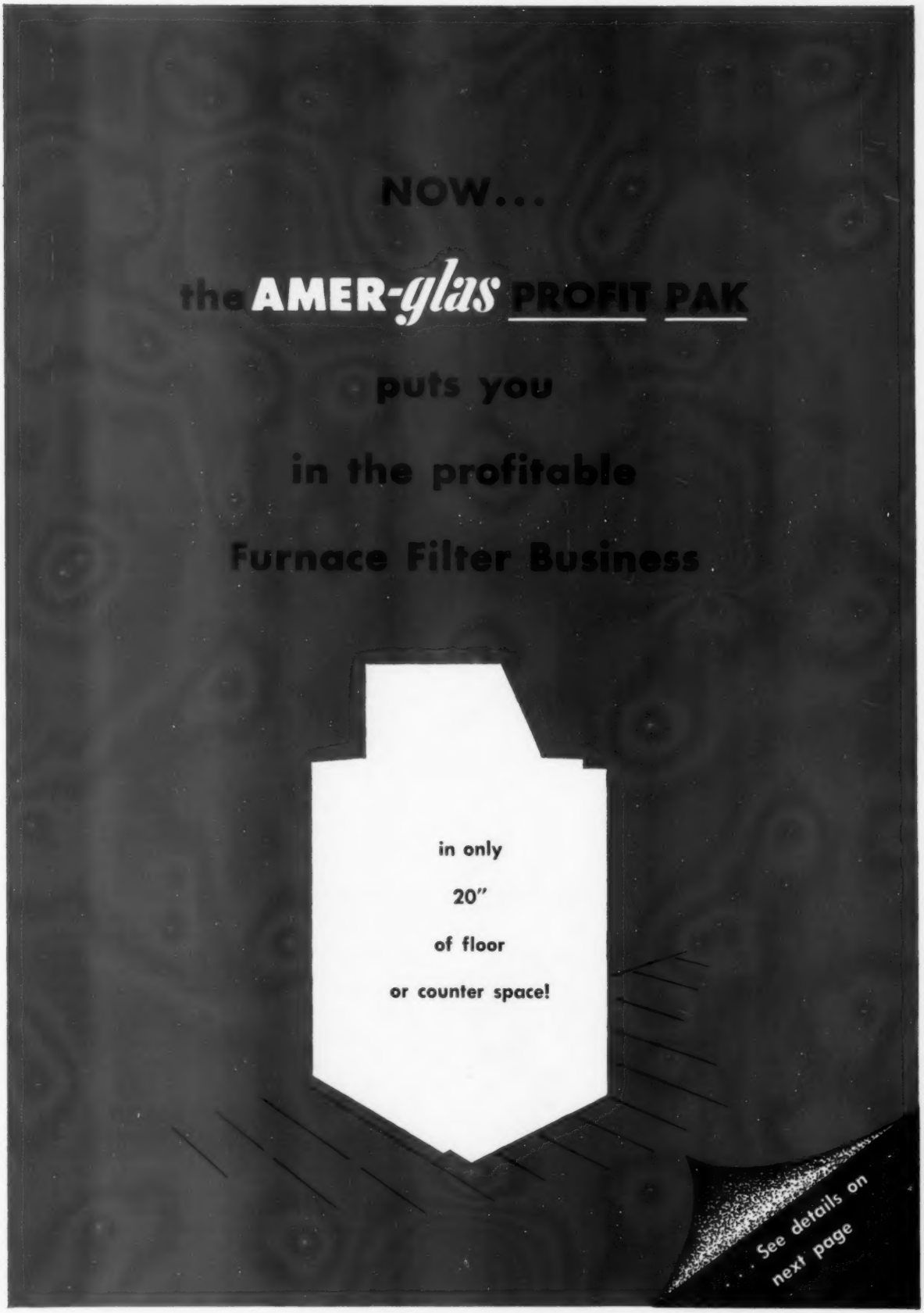
Manufacturers' Group Seeks To Cut Federal Income Tax

CONTRARY TO POPULAR BELIEF, an election year is the time to face critical national issues, the National Association of Manufacturers said. Thus the association plans to bring the income tax question before presidential candidates this year. The association has worked out a five-year tax plan designed to trim taxes.

"As the American economy expands, so does the amount of federal tax revenues from a given set of rates, but in greater proportion," the association report states. The association's idea would be to apply the revenue increase of the American economy to the tax rates. The cost of the plan would be about $10 billion, or $2 billion less than the expected revenue growth of $12 billion for the next five years.

The plan includes the proposal that there be five successive annual reductions of 16 percent in the surtax part of each tax rate, with each reduction computed on the original surtax — that part of the rate above 20 percent. With the top rate reduced to 35 percent, the 50 percent rate, for example, would be reduced to 26 percent.

The corporate tax now consists of a 30 percent normal tax and a 22 percent surtax, or a combined rate of 52 percent. The association's proposal is to follow this reduction by four successive annual reductions of three percentage points each, or a total of 12 percentage points, to bring the combined top rate down to 35 percent at the end of five years. The 12 percentage points would be divided equally between the normal and the surtax, so that the total reductions from present rates would be 11 percentage points in the normal tax and 6 percentage points in the surtax.


NOW...
the AMER-glas PROFIT PAK
puts you
in the profitable
Furnace Filter Business
in only
20"
of floor
or counter space!
See details on next page

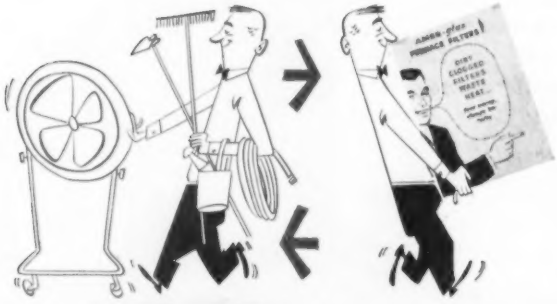
a complete self service FURNACE FILTER

Never before have you been offered an opportunity like this to profit on furnace filters. Check *all* the advantages of the exclusive new AAF PROFIT PAK —and you'll want to order yours today.

PACKS MORE SALES APPEAL IN MINIMUM DISPLAY SPACE You'll be amazed at the compactness of this furnace filter "department". It requires a scant 20" width of counter or floor space in your store. And it's mighty attractive, too . . . *planned* to instantly catch the eye of customers . . . remind them to change filters regularly.

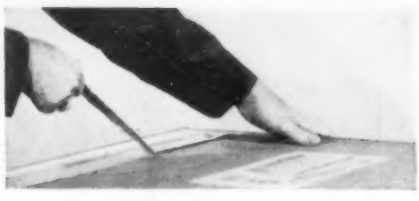
HANDLES OVER 85% OF ALL FILTER PROSPECTS PROFIT PAK conveniently holds 26 AMER-*glas* FILTERS in eight of the fastest-moving sizes—a wide range to handle over 85% of your furnace filter replacement calls. Each size is in plain view, ready for profitable, fast "take-with" sales. You'll save time hunting up filters, going back and forth to your stock room. *Filters sell themselves in the PROFIT PAK.*

MOVES RIGHT IN WHEN SUMMER SELLERS MOVE OUT



When summer sellers slack off, here is an immediately available replacement for months of steady business. Move the space-saving unit right in without extensive counter or floor rearrangements. PROFIT PAK *suggests* sales . . . saves your time . . . instantly becomes an attractive "self-service" center you'll be proud to display. It makes your store *headquarters* for AMER-*glas* FILTERS—and with a minimum stock investment.

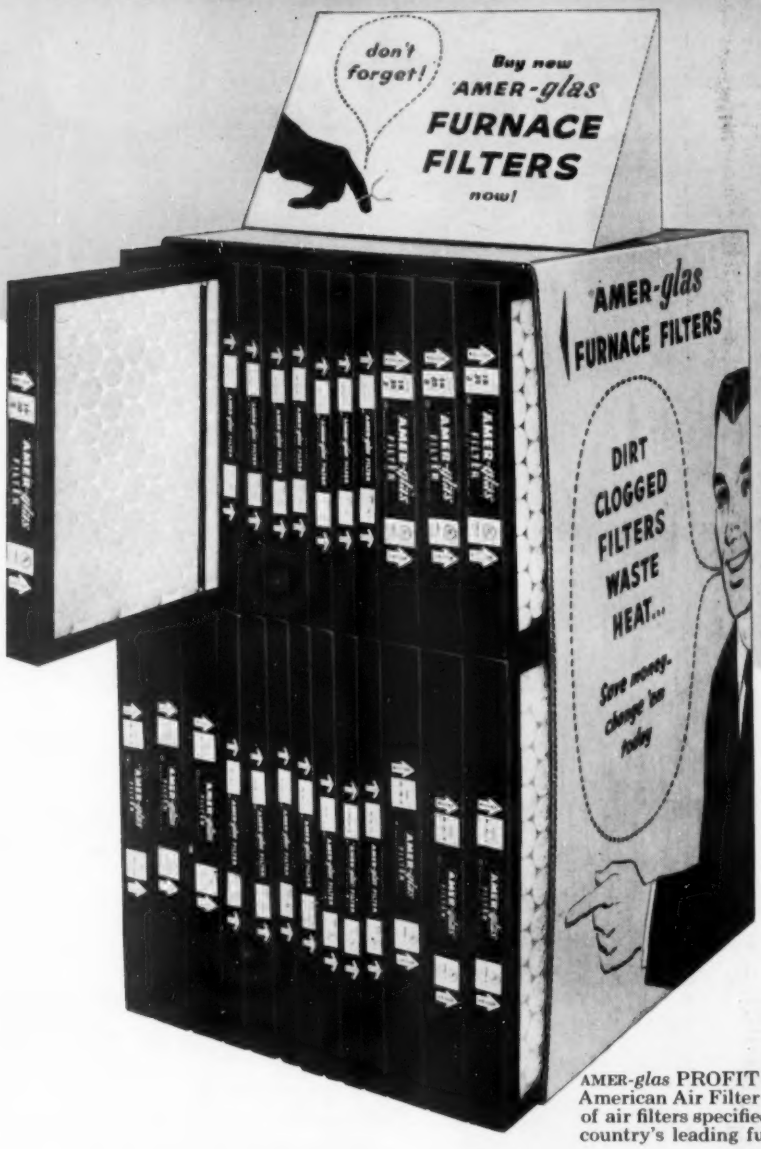
JUST ZIP CARTON OPEN AND SET IT UP You simply pull the tab on the shipping carton, and presto—there is your eye-stopping, customer-catching self-service display! The front of the shipping carton comes right off, revealing this unique, orderly way of displaying filters. The display is complete—even to a sign which is easily folded back to sit atop the display, flagging down shoppers!



DEPARTMENT for quick stop-and-shop sales!

®AMER-*glas*

PROFIT PAK



Act Now!

AMER-*glas* PROFIT PAK is offered exclusively by American Air Filter Co., makers of a complete line of air filters specified as original equipment by the country's leading furnace manufacturers.

Get all the facts today. →

PROFIT PAK

the easy way

to sell

®AMER-*glas*

Replaceable

Furnace

Filters!

An Exclusive Offer by the makers of AMER-glas FILTERS

. . . The Filter That's FIRST in Selling Features

. . . the original "no prickly slivers" filter!

. . . the original progressive pack filter!

. . . the *whiter* white filter!

. . . the first filter to trap dirt *all the way through!*

American Air Filter

COMPANY, INC.
LOUISVILLE 8, KENTUCKY
215 Central Ave., Louisville 8, Ky.

AAF

herman nelson

DON'T MISS THIS OFFER! MAIL TODAY

Yes, we certainly want to hear more about PROFIT PAK, the fast, money-making way to sell replaceable air filters. Please rush special price offer and all information right away.

NAME_____

FIRM_____

ADDRESS_____

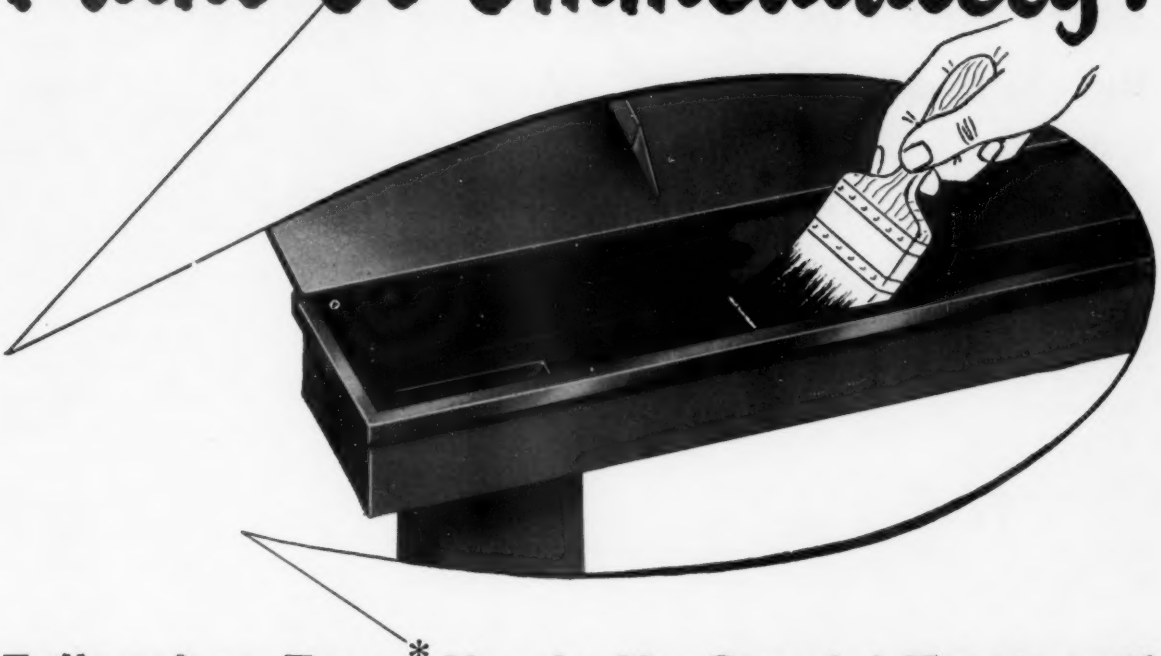
CITY_____ ZONE____ STATE_____

MY DISTRIBUTOR IS_____

ADDRESS_____

(See Preceeding Pages for More Details)

Paint It* Immediately!



Follansbee Terne* Needs No Special Treatment!

Follansbee Terne offers the wonderful advantage that it can (and should) be painted immediately after installation. Unlike many other metals, it does not need to weather or be given any special treatment before it can make a perfect bond with the paint—a bond that will last.

You'll find too that Follansbee Terne offers many other advantages as a complete roofing material; and for gutters, downspouts, valley, flashing and weathersealing as well. Terne is far more ductile, Terne is easiest to solder and expansion joints are unnecessary. Most importantly, Terne has proof of its long life and serviceability.

When you sell and install Follansbee Terne, you're assuring yourself a better profit. You're also giving your builder customers a *lifetime, quality* job that will please his customers too.

Follansbee Terne is carried in stock by leading sheet metal distributors everywhere

FOLLANSBEE

STEEL CORPORATION

FOLLANSBEE, WEST VIRGINIA

Terne Roofing • Cold Rolled Strip • Polished Blue Sheets and Coils

Sales Offices in Principal Cities

WASHINGTON LETTER

(Continued from page 28)

Sales and Receipts Show Big Seasonal Rise for May

MANUFACTURERS' SALES and receipts of new orders rose more than was anticipated on a seasonal basis in May, the Office of Business Economics, U.S. Department of Commerce announced. After seasonal adjustment, May sales were at a record rate. Backlogs of unfilled orders were unchanged during the month, while the book value of inventories advanced to a higher level during this period.

Manufacturers' sales increased about 6 percent over the May, 1955 figure, for a total of $27.8 billion. After allowances for seasonal variations, sales in May increased 2 percent over the April rate with both the durable and nondurable goods groups contributing to the rise. Except for a decline in sales by motor vehicles, sales gains were widespread among the metal fabricating industries and among the major soft goods lines.

New orders during May totaled $27.7 billion, or 4 percent above the total a year ago. The flow of new business was 3 percent above April's total, after considering seasonal adjustments. The largest relative gains were felt by primary metals and machinery companies. Unfilled orders outstanding at the end of May totaled $57.4 billion, or $9 billion above May, 1955.

Inventory book values at the end of May totaled $48.8 billion, about $5 billion more than in May, 1955. A substantial part of this dollar rise reflects the increase in prices of both raw materials and industrial goods. After seasonal adjustments, inventories were $600 million higher than at the end of April.

Homes Built Smaller, Tighter, Says Engineer

TODAY'S HOMES ARE built smaller and tighter leaving less opportunity for the escape of moisture, which can cause interior paint damage and mold formation, according to a paper by Frank A. Joy, professor of engineering research, Pennsylvania State University, and D.R. Fairbanks, engineer, Carrier Corp., the American Society of Heating and Air-Conditioning Engineers reports.

The authors conclude in their paper on the effect of unbalanced air pressure on permeance that the diffusion of water vapor through a membrane is not effected by a small unbalance of the air pressure across it when no air transfer results. The tests also revealed that air passing through a membrane, because of the wind or some other small unbalance of pressure, carries moisture with it. If the air flow and vapor pressure gradient flow is in the same direction, it increases the moisture transfer. When air motion is opposite the direction of moisture transfer, the movement of moisture will be reduced.

Predict 1956 As Top Year for Oil Industry

(Continued from page 28)

"In our expanding economy," Mr. Weldon said, "we expect to add between 700,000 and 800,000 new users each year for the next five years. Approximately 600,000 of these will be installations of commercial industrial oil burners in factories, schools, hospitals and office buildings.

"The $3 billion oil heating industry represents almost one percent of the gross national product with $1.8 billion being expended for home heating oil and $650,000,000 for new equipment."

Building Shows 2000 Gain in May Over April

BUILDERS STARTED 108,000 nonfarm dwelling units in May, a seasonal gain of 2000 over April, but about 30,000 less than in May, 1955, the U.S. Department of Labor's Bureau of Labor Statistics announced.

On a seasonally adjusted basis, the 107,000 privately owned units placed under construction in May, 1956 represented an annual rate of 1,150,000 units, the same as in April. A total of 1000 publicly owned units were started in each of these months, the bureau announced.

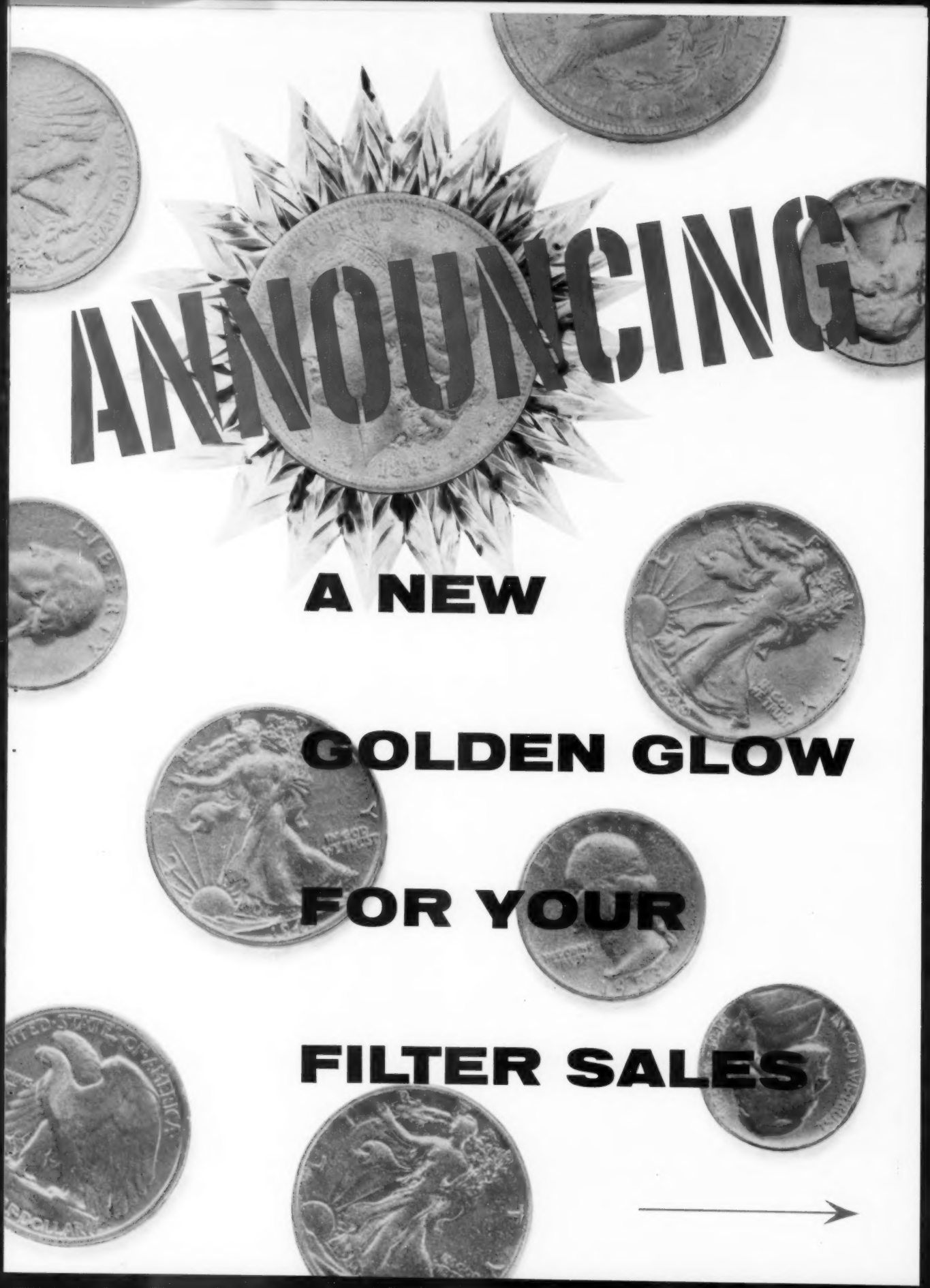
Housing starts for the first five months of 1956 totaled 463,000 and compared favorably with totals for the same periods in 1951-54, but they were 17 percent less than the average for the five month figures for 1950 and 1955. Units started under FHA and VA inspection during January through May, 1956 dropped 27 percent below the comparable months in 1955, added the bureau.

Small Business Shows Large Profit Increase

SMALL BUSINESSES AREN'T doing too badly, contrary to many reports, according to the Federal Trade Commission-Securities and Exchange Commission Quarterly Report for Manufacturing Corporations.

The report shows that businesses with assets of less than $250,000 showed the greatest increase in profit margins of all classes last year. Profit margins for this group were 57.1 percent higher than in 1954, compared to a 20 percent increase for manufacturers of all sizes.

While failures in the small business category have shown a marked increase since 1950, the number of new incorporations for the same period shows a greater increase—36 percent new businesses against 24 percent failures.


ANNOUNCING
A NEW
GOLDEN GLOW
FOR YOUR
FILTER SALES

THERE'S A GOLDEN TOUCH IN

NEW GOLDEN FIBERGLAS DUST-STOP AIR FILTERS

All-new golden filter promises sunshine clean, sunshine warm homes for your customers . . . and the sunshine of solid sales for you!

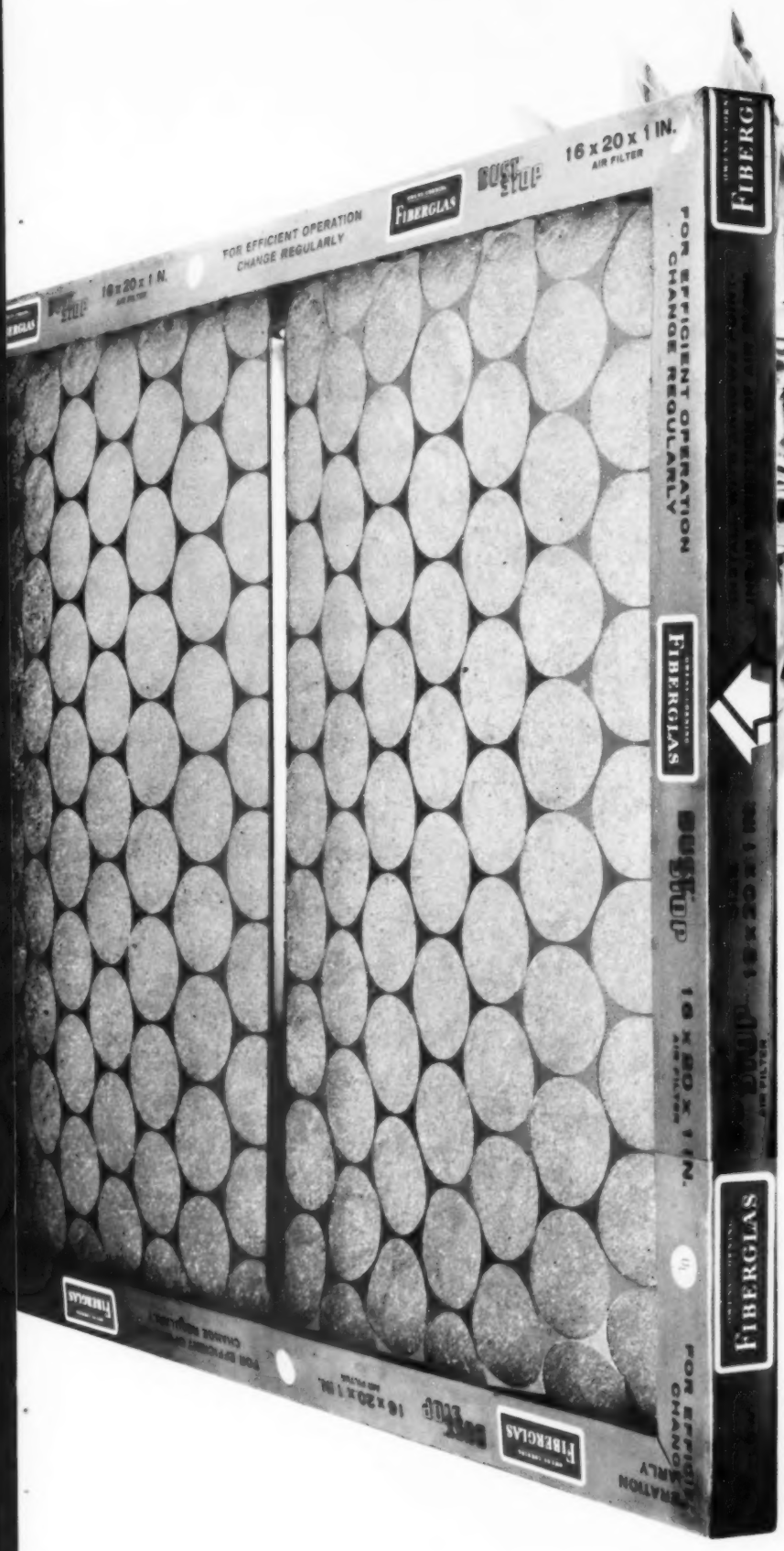
Today—with air filter market potential booming to new highs—Owens-Corning Fiberglas announces a sensational new kind of Fiberglas* Dust-Stop* Air Filter! It's a golden beauty, made with finer, softer fibers than ever, that sells on sight!

Beyond a doubt, *this* is clearly among the world's most efficient replacement filters! It *looks* better . . . *feels* better . . . *works* better! It's a better, easier product to sell—20% lower initial air resistance lets more heat through.

You've seen the air-filter business skyrocket—already 8 million forced warm air furnaces are in operation—and a 30% increase over 1955 sales of such units is predicted for this year alone! Now—with this great new golden Fiberglas Dust-Stop and bang-up introductory campaign—you have a fast-selling profit-maker—for now Dust-Stop has made the best better than ever.

EASIER TO HANDLE! New Fiberglas Dust-Stop Filters are made with finer, softer fibers than ever before! Handle them—and you'll notice the difference!

EASIER TO SELL! New "Full Season's Supply" package sells 4 filters at once! New Filter Roll package gets replacement business from pad filter furnaces.



EYE-CATCHING BEAUTY SELLS ON SIGHT!

The stunning red-and-gold color combination and bright new packaging give Fiberglas Dust-Stop astounding visibility in your store. More eyes see 'em . . . more folks buy more of 'em. Made to order for impulse sales!

THE NEW JIMINY FILTER SAYS:

I'm only part of a bright new filter campaign. See next page for the rest!

SELL YOUR SHARE OF NEW DUST-STOP USE THIS GOLDEN CASCADE OF ADVERTISING AND SALES PROMOTION

BIG STRIKING ADS in two of America's greatest magazines—your customers will see and read about new golden Dust-Stop Air Filters in Better Homes and Gardens and LIFE.

PLUS ALL THE COMPLETELY NEW SALES HELPS you need—including the sensational new Jiminy Filter display and the easy-profit "Reminder Service Plan"—all specially designed to make your business the neighborhood headquarters for the new Fiberglas Dust-Stop Filters.

Send for New Gummed LIFE Ad Reprints

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Idea Exchange

for

Dealers, Contractors

Ideas Pay Off for Both Employees and Company Management

SOME SHEET metal contractors have made it a practice to encourage employees to submit ideas that result in developing safer ways to perform their work, reduce the volume of waste and provide short cuts in fabricating techniques. When good ideas are accepted by management, the employee usually is awarded a valuable prize for his or her contribution.

Rewards Are Attractive

An Amherst, O. sheet metal contractor, the A. Nabakowski Co., has developed this practice further than most contractors and dealers. This company gives a monthly award of a $25 defense bond to the employee submitting the best idea each month. At the end of the year, a review of the twelve monthly awards will be made and an annual award of a one-week paid vacation and an all-expense Florida trip for two people will be made to the employee submitting the best idea of the year.

Judging of the entries is done by a three man committee consisting of M. W. Nabakowski, representing management; Stanley Kryk, representing the employees; and a third party not connected with the company, Jack Koontz, mayor of Amherst. The submitted ideas are judged for their originality and usefulness to the company.

Ideas submitted to date cover such items as the January prize winner (submitted by Rudy Klier, a sheet metal journeyman) which was a method of riveting lengths of round sheet metal duct together that reduces handling time and makes the sections easier to handle. Up to 20 ft of round duct can be riveted together by one man. Other ideas submitted cover a method of pattern layout, resulting in fewer parts needed for a round duct elbow; a jig for holding material being handled at the sheet metal band saw; and a method for eliminating a large amount of the handwork necessary for moving material about the shop.

Employees Are Enthusiastic

During the first six months of the year, the monthly prize has been won twice by one employee. There are usually four ideas to be considered each month. Management has been able to keep interest in this activity at a high peak by periodically reminding employees in all departments that ideas and suggestions be submitted even though the idea or suggestion may seem to be of little value to the person making the proposal. Employees have responded very well. One employee submitted 11 ideas within five months.

Ideas and suggestions which do not win the monthly award but do have potential value to the company are put into use and the person submitting the proposal receives a cash prize also.

WINNER OF monthly idea award Rudy Klier (right) receives congratulations and a $25 defense bond from M. W. Nabakowski, president of the company

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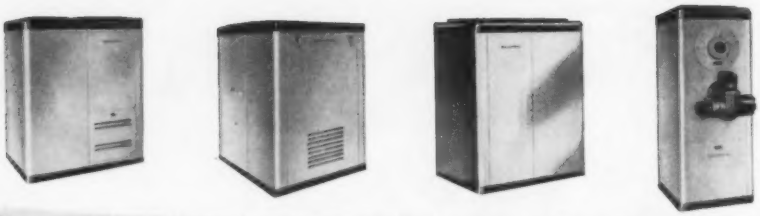

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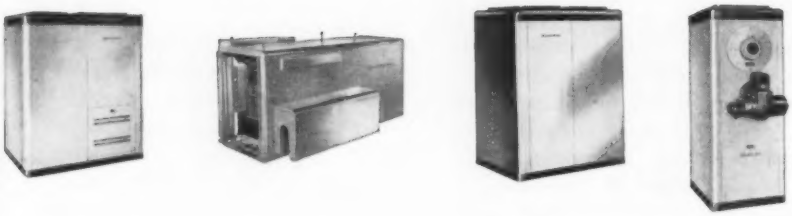

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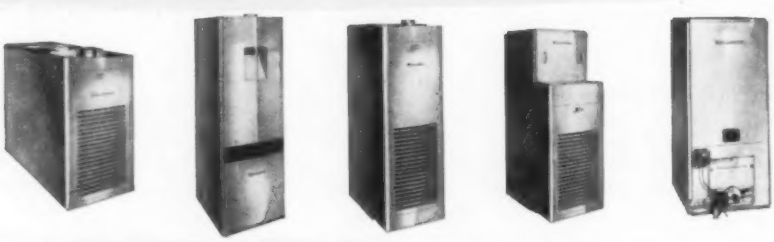

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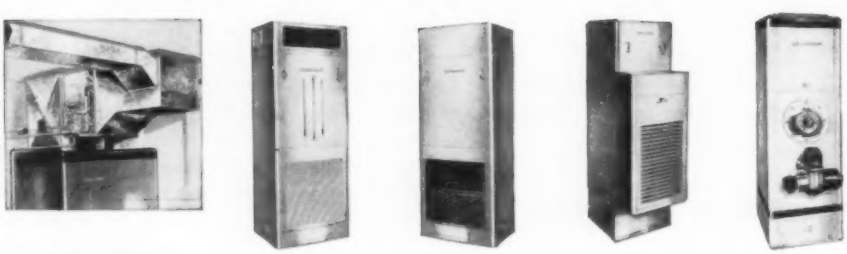

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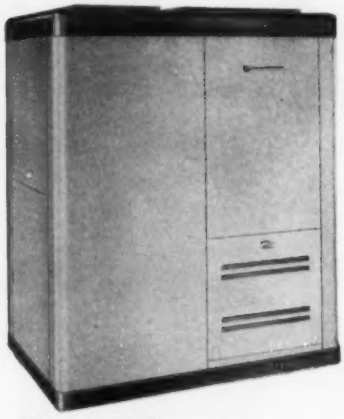
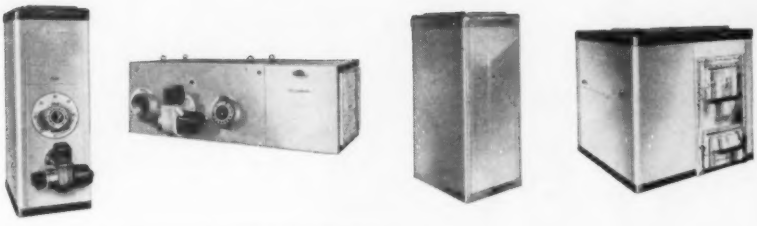
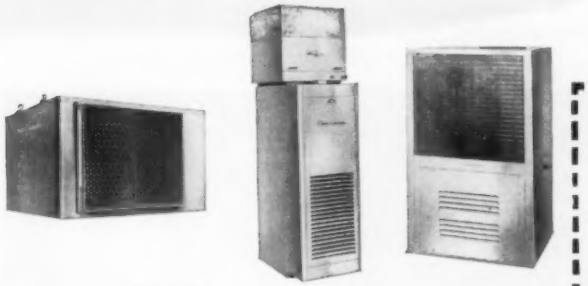


Two-tone Hammer Finish Green



Gleaming White Enamel



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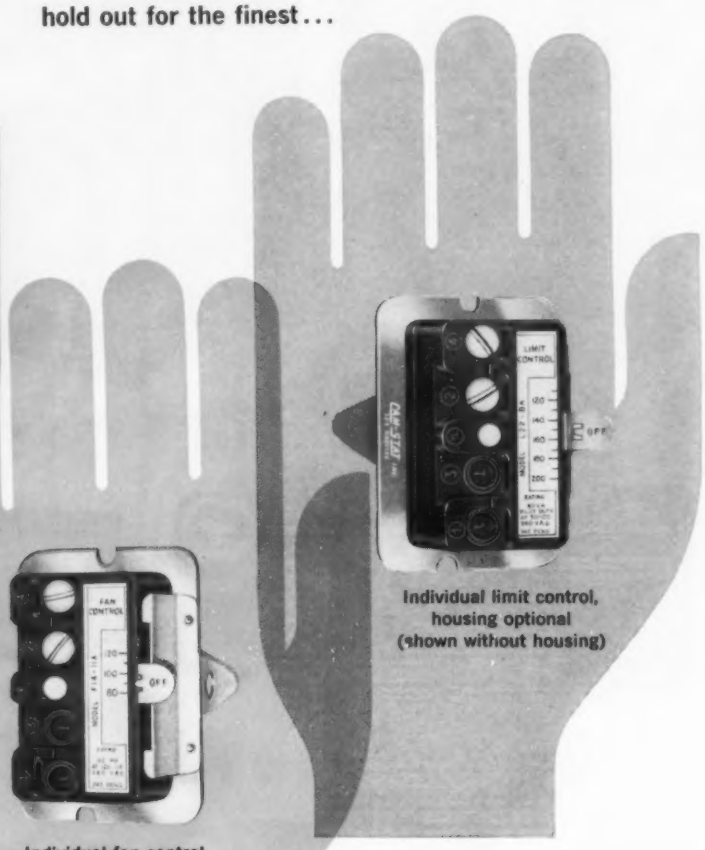

Individual limit control, housing optional (shown without housing)

Individual fan control, housing optional (shown without housing)

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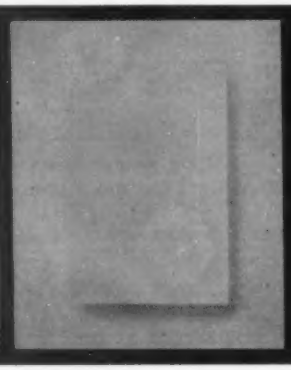
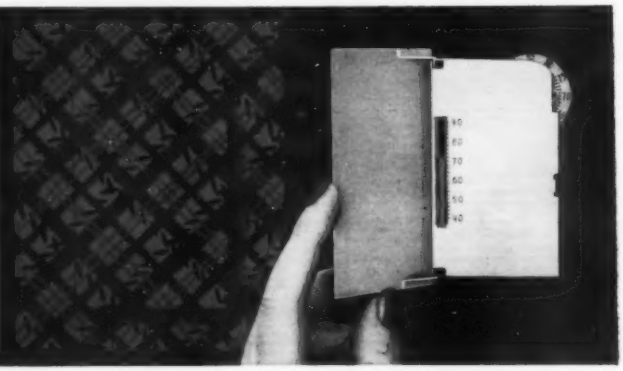




MOCK TRAINING SESSION was put on by (l or r), A. G. Earnshaw, J. B. Allen, William H. Brauer, Thomas J. Delaney, W. L. Dulle, Ralph B. Bell, W. L. Troescher and Harold Squire

Wholesalers Consider Ways to Give More Assistance to Dealers

THE SPRING MEETING of the National Heating and Air-conditioning Wholesalers' association revealed the fast pace at which this group has been moving to provide assistance to the dealer in the rapidly growing warm air heating and cooling industry. The program held at French Lick, Ind., June 17-19, covered such subjects as internal management, credit, cooling, wholesaler-manufacturer responsibility and reports from 14 committees, all designed to provide a maximum of service at a minimum cost. Some of the subjects were covered in panel-audience participation sessions, others by individual speakers.

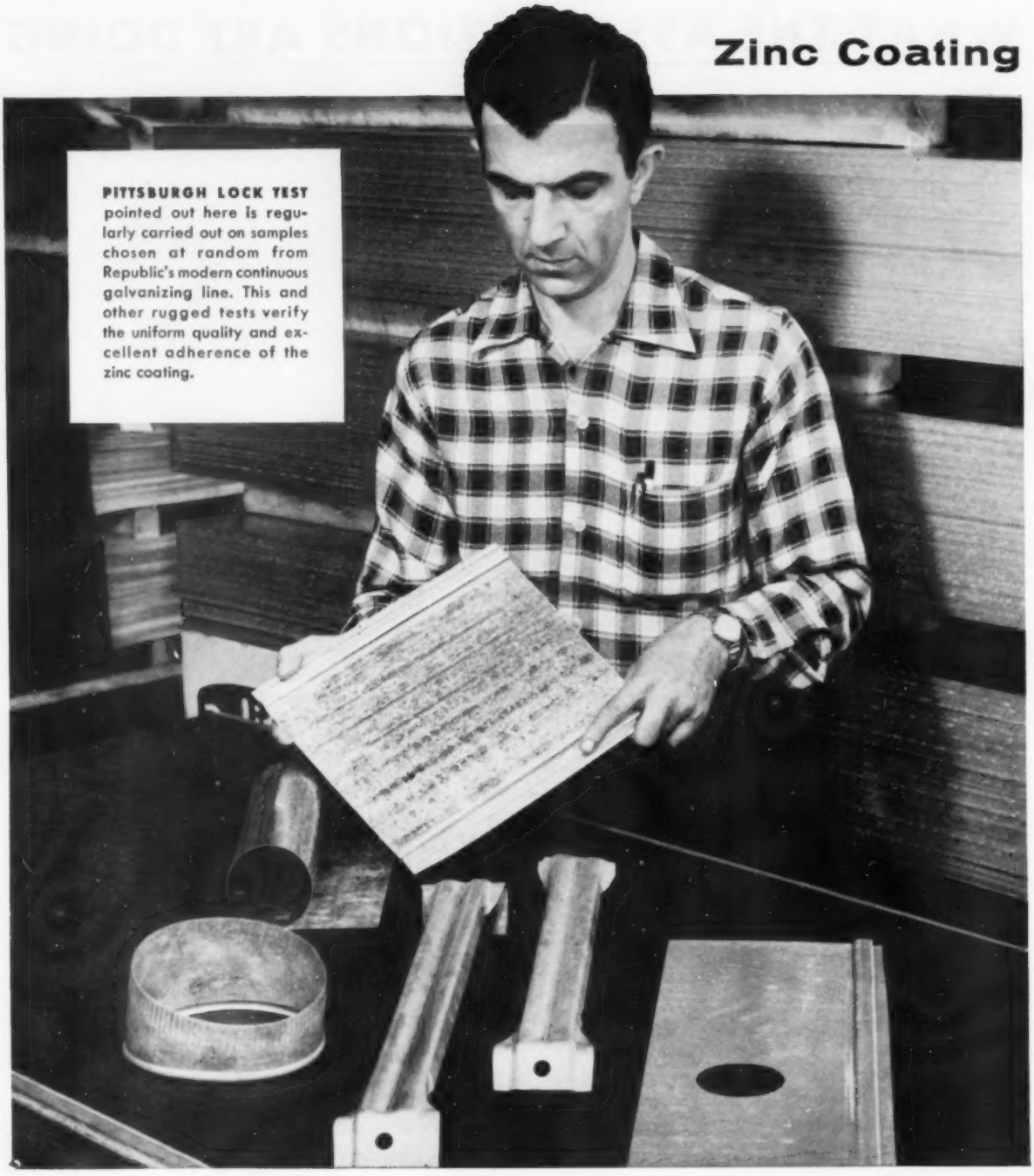
Lifetime Membership Voted

At the winter meeting in New York, A. G. Earnshaw was elected vice president, but early in 1956 he sold his business. Mr. Earnshaw was a charter member of the association and has contributed much of his time and energy to help the association to achieve its goals. The officers and board of trustees paid tribute to this service by voting him the first life membership in the association. Mr. Earnshaw will continue to participate in the association's programs.

One of the meeting's highlights was a mock training session in creative salesmanship. This was taken from the W.I.D.A. (Wholesalers Integrated Development Approach) program conducted by the Minneapolis-Honeywell Regulator Co. for the National Heating and Air-conditioning Wholesalers during two week-long meetings held previously. The mock session was under the leadership of Tom J. Delaney, Waterbury Heating Supply, with Bert Earnshaw, Tiffin Art Metal Co.; Jack Allen, Allen Heating Supply; Bill Brauer, A. G. Brauer Supply Co.; W. L. Dulle, E. E. Souther Iron Co.; Ralph Bell, Rich-

(*Continued on page 46*)

Zinc Coating



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STEEL

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(Continued from page 43)

SUMMER AIR CONDITIONING panel consisted of (l to r), seated, Harold Squire and Glenn Ashburn; standing, C. A. Reichelderfer, W. L. Dulle, W. A. Lake and Frank Green

CREDIT AND COLLECTION panel was made up of (l to r), seated, Meril A. May and Charles L. Brooks; standing, T. E. Dooley, Ralph J. Woodward and Robert H. Swart

mond Supply Corp.; W. L. Troescher, Hesco Corp.; and Harold Squire, Squire Heating Supply Co., as participants.

How to Meet Objections Showed

Central theme followed during the mock training session was one of the 50 objectives included in the original program. In the original program there was one objective for each week. The objectives were designed to improve the functioning of every department in the wholesaling business toward achieving a larger sales volume. All employees were invited to attend the meetings to add their points of view. In the mock session the subject was, "How to meet customer objections." Participants gave comments picked up during conversations with customers. Each of these comments was listed on a blackboard. After the list was completed, each customer objection was discussed in detail with participants explaining how they overcame the individual objection.

A panel of manufacturers and wholesalers presented the how, when, where and why of the summer air conditioning business. Moderating this panel was Frank L. Green, Heating Wholesalers Co. Panel members were Glenn A. Ashburn, Ashburn Supply Co.; Harold Squire, Squire Heating Supply Co.; W. L. Dulle, E. E. Souther

(Continued on page 50)

PRE-LUNCHEON CHAT is enjoyed by (l to r) Gail C. Mason, Congressman Gordon H. Scherer and Oscar P. Brauer. Congressman Scherer addressed the convention at the luncheon

RECEIVING CONGRATULATIONS from George F. Wheelock, Sr., is A. G. Earnshaw, who was voted the association's first life membership

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NO. 2000 U.S. PERIMETER BASE INTAKE

The Sensational — COMPLETELY NEW — Companion to the Pace-Setting No. 1000. Has the same SIMPLE-TO-INSTALL Construction — the SAME EYE-PLEASING, yet Non-Vision, DESIGN. No. 2000 INTAKES are Furnished in 24" or 48" lengths. MAXIMUM FREE AREA — INVERTED LANCED OPENINGS MAKES EASY PAINTING — EASY CLEANING.

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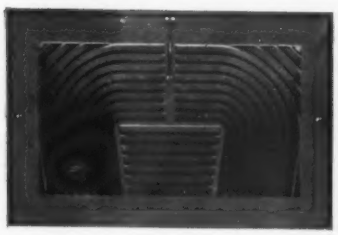

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U.S. A. C. SIDEWALL DIFFUSER REGISTER. Minimum resistance — a complete 180° SUNBURST DIFFUSION PATTERN that insures Unequalled and Constant Air Diffusion. Complete with Balancing Set-Lock . . . 3 sizes sufficient for every need.

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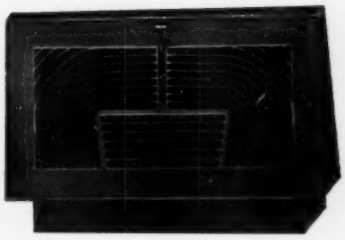

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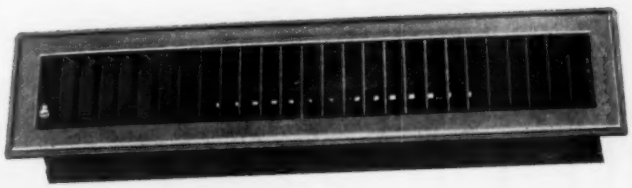

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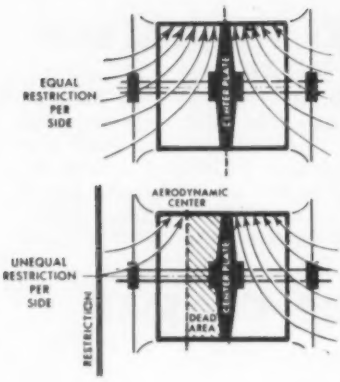
MORRISON

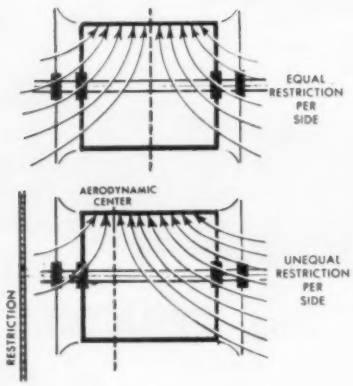
END SUPPORTED WHEEL

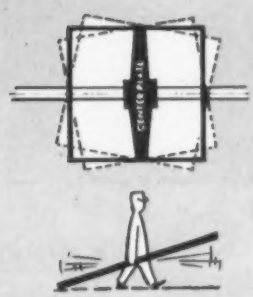


1 MAXIMUM UTILIZATION WITH END SUPPORTED WHEEL

When inlet conditions are unrestricted, the aerodynamic center is in the exact geometric center in both Morrison End Supported wheels and center plate wheels.

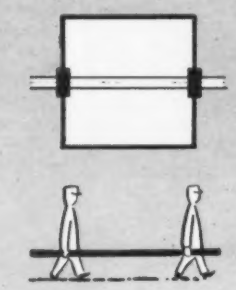
BUT — when one inlet of the blower is more restricted than the other, the aerodynamic center in a Morrison End Supported wheel, moves toward the restricted side permitting greater utilization of the unrestricted side as illustrated. In a center supported wheel, the restricted side of the blower is starved and the unrestricted side is unable to compensate for it.

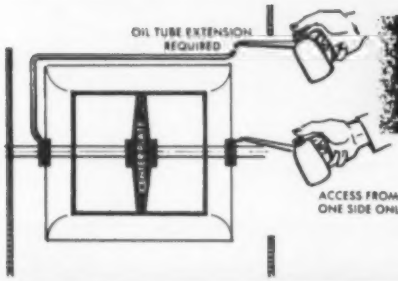




2 STABLE SUPPORT WITH END SUPPORTED WHEEL

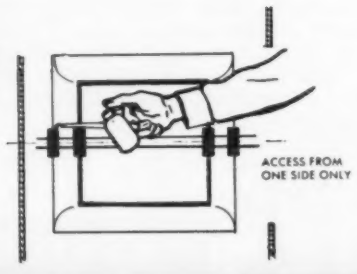
Morrison End Supported Wheels are mounted stably on the shaft, eliminating rocking action that causes wheel wobble.





3 EASY MAINTENANCE WITH END SUPPORTED WHEEL

With Morrison End Supported Wheel, oiling is easy. You oil one end — and as the drawing shows — reach through the wheel to oil the other end. No complicated tube extension is necessary.



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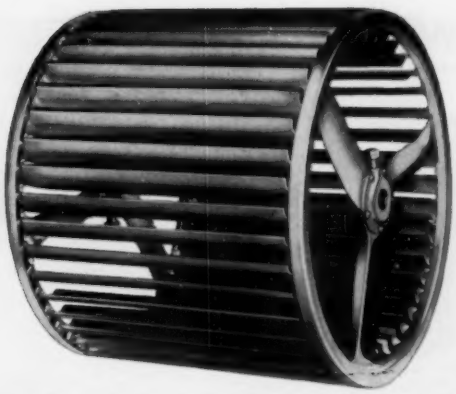
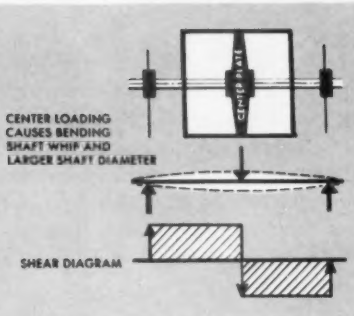
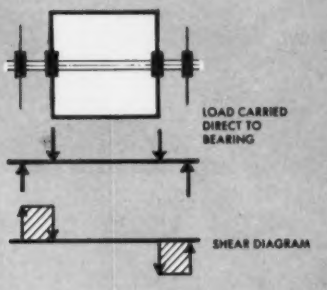
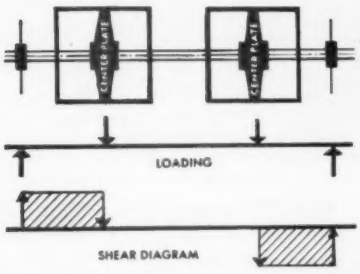




4 MINIMUM SHAFT LOADING WITH END SUPPORTED WHEEL

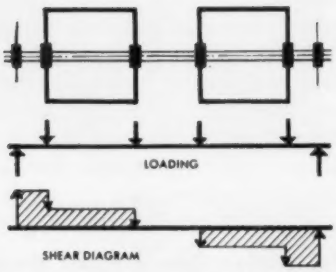
Morrison End Supported Wheel relieves strain as load is carried directly to bearings. There is no shaft whip. Center Plate Wheels put added strain on the shaft, causing bending, shaft whip and require larger shafting.

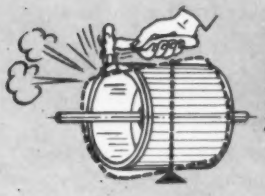




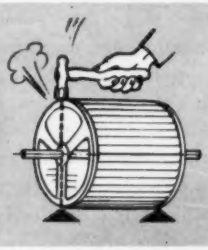
5 UNIFORM DISTRIBUTION (for Twin Blowers) WITH END SUPPORTED WHEEL

Uniform distribution of load allows using smaller shafting. Heavy concentrated load causes shaft whip and larger shafting.





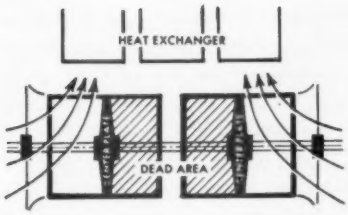
6 STRONGER FRAME WITH END SUPPORTED WHEEL



In the case of Morrison End Supported wheel, impact on the end of the wheel is directly supported by sturdy end rings.

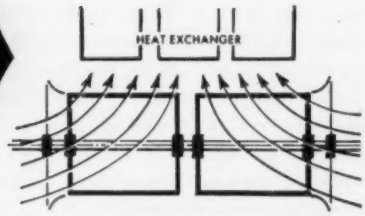
Impact on end of center plate wheel lacks sturdiness and distortion results.

Aids safe shipment.



7 EXTRA WHEEL ADVANTAGES WITH END SUPPORTED WHEEL

In special applications of two wheels for wide air distribution, the attached drawing shows plainly the greater distribution of air possible with the End Supported Wheel.



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(Continued from page 46)

WELCOMING SPEAKER Richard E. Loebell (left) are William L. Troescher and Wilbur R. Bull, executive secretary

Iron Co.; C. A. Reichelderfer, Waterman-Waterbury Co. and W. A. Lake, Carrier Corp.

Speaking on the importance of and the handling of dealer education, Glenn Ashburn said every retail phase of the industry must be covered in training programs for dealers and their employees. The most important subjects named were sales, service, merchandising, product knowledge and engineering. Each subject was discussed by Mr. Ashburn, who recommended effective ways to conduct an educational meeting.

Wholesalers Should Know Dealers' Abilities

Establishing qualified dealers was the subject covered by Harold Squire, who pointed out the importance of knowing each dealer as well as possible and then weighing his ability to perform the services required at the retail level. When a dealer is found to be lacking in marketing or business management, he should be instructed in the points he fails to understand. If this system is followed, weak dealers will become qualified to receive the benefits offered by wholesalers.

Large dollar volume credit and finance problems were discussed by W. L. Dulle, who showed that warehouse costs have risen because of the higher interest paid on money borrowed to maintain large stocks of high priced cooling equipment. Varied models have been responsible for more cooling sales, but the cost of doing business is different for cooling than for heating. Thus a different overhead figure must be used to allow for the additional costs involved.

The technical aspects of cooling equipment were discussed by C. A. Reichelderfer. Mr. Reichelderfer said the refrigeration system in itself is no problem for the heating-cooling dealer. The problem, he pointed out, is the handling of air volume required for cooling. Reviewing all of the border-line trades — refrigeration, plumbing and electrical — he showed how each contributed something to the overall installation, but it is the dealer who puts in the air distribution system, selects the equipment to do the job and is held responsible for its performance. He said: "There is no trade with the necessary experience to install residential cooling equipment except the sheet metal-heating-cooling dealer."

Speaking on how a manufacturer's sales manager looks at summer air conditioning, W. A. Lake said his point of view could be summed up in two words — "opportunity" and "challenge." Discussing "challenge," he said this objective will always exist — the industry must strive to produce better products at better prices. This does not mean the product has to be sold at lower prices, but like automobiles the equipment must be continually improved so each model has more features to offer than previous models. Speaking about "opportunity," he said if the industry meets the challenge, the opportunity will continue to expand.

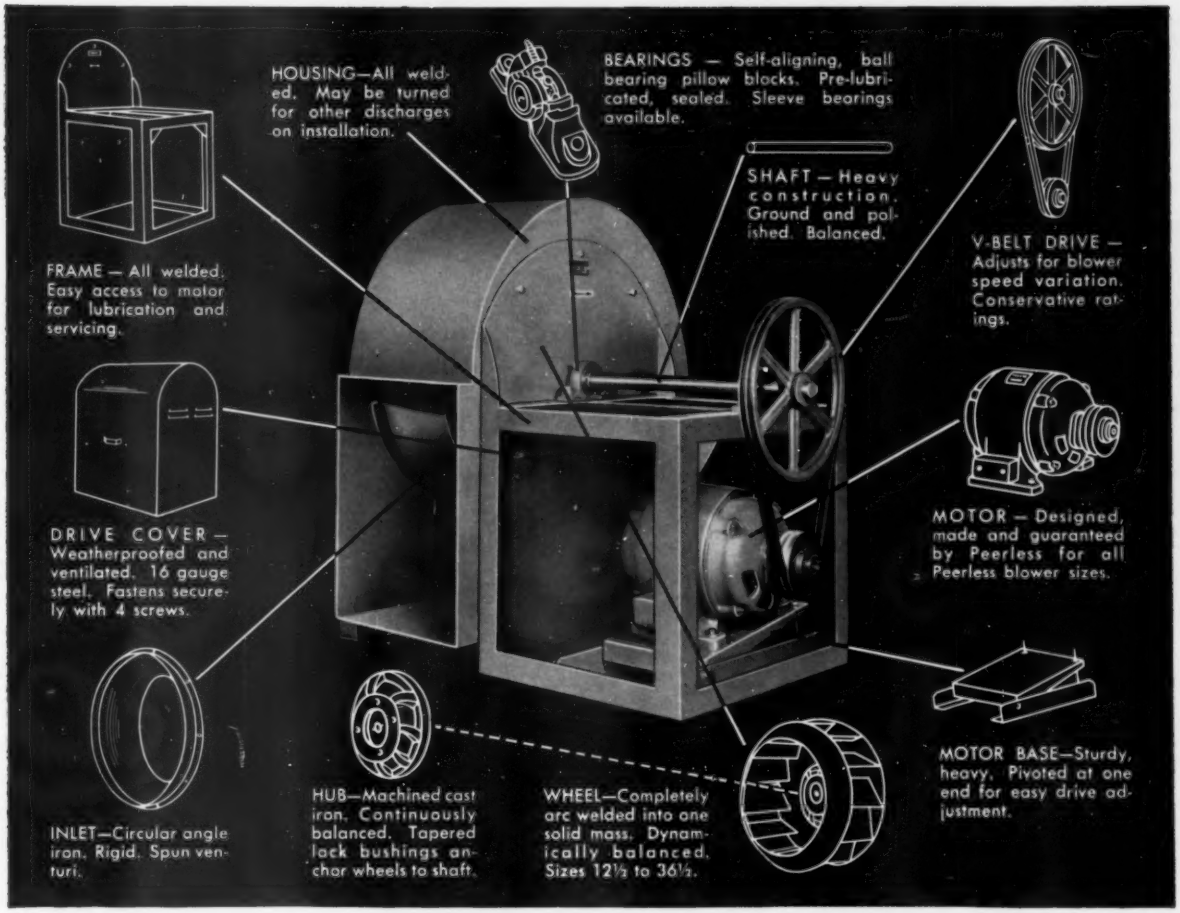
Wholesaler Fills a Vital Need

The importance of the wholesaler's operation in the heating and cooling industry is more vital now than ever before, according to Richard E. Loebell, Scaife Co., Timkin Silent Automatic Div. Mr. Loebell reviewed the experiences of manufacturers who sold direct to dealers and pointed out the high sales costs involved and explained how difficult it is to stay in touch with dealer activities. He showed how local wholesalers are in an excellent position to provide the services needed by dealers, on a much more intimate level, than a large manufacturing company located hundreds of miles away from the dealer's problems.

In the credit forum, Robert J. Woodward, Palmer-Donavin Mfg. Co., moderated a panel consisting of Charles L. Brooks, Armstrong Furnace Co.; T. E. Dooley, Rheem Mfg. Co.; Meril A. May, Dun and Bradstreet, Inc.; and Robert H. Swart, Michigan Automatic Heating Equipment Co. Mr. Woodward reported on the payment characteristics of several unnamed dealers from a city of about 400,000 population. He pointed out how these dealers had fallen into unhealthy business situations because they failed to understand the use of their credit with the wholesalers who were supplying them, and how, by careful guidance, the wholesalers were able to reestablish the dealers' credit rating.

Pointing out how the sheet metal contractor took over the warm air heating business many years ago and is now following the same pattern for the sale and installation of cooling equipment, Charles L. Brooks stated the cost of financing the dealer's use of capital was a cost of

(Continued on page 54)


HOUSING—All welded. May be turned for other discharges on installation.
BEARINGS — Self-aligning, ball bearing pillow blocks. Pre-lubricated, sealed. Sleeve bearings available.
SHAFT — Heavy construction. Ground and polished. Balanced.
V-BELT DRIVE — Adjusts for blower speed variation. Conservative ratings.
FRAME — All welded. Easy access to motor for lubrication and servicing.
DRIVE COVER — Weatherproofed and ventilated. 16 gauge steel. Fastens securely with 4 screws.
MOTOR — Designed, made and guaranteed by Peerless for all Peerless blower sizes.
INLET—Circular angle iron. Rigid. Spun venturi.
HUB—Machined cast iron. Continuously balanced. Tapered lock bushings anchor wheels to shaft.
WHEEL—Completely arc welded into one solid mass. Dynamically balanced. Sizes 12½ to 36½.
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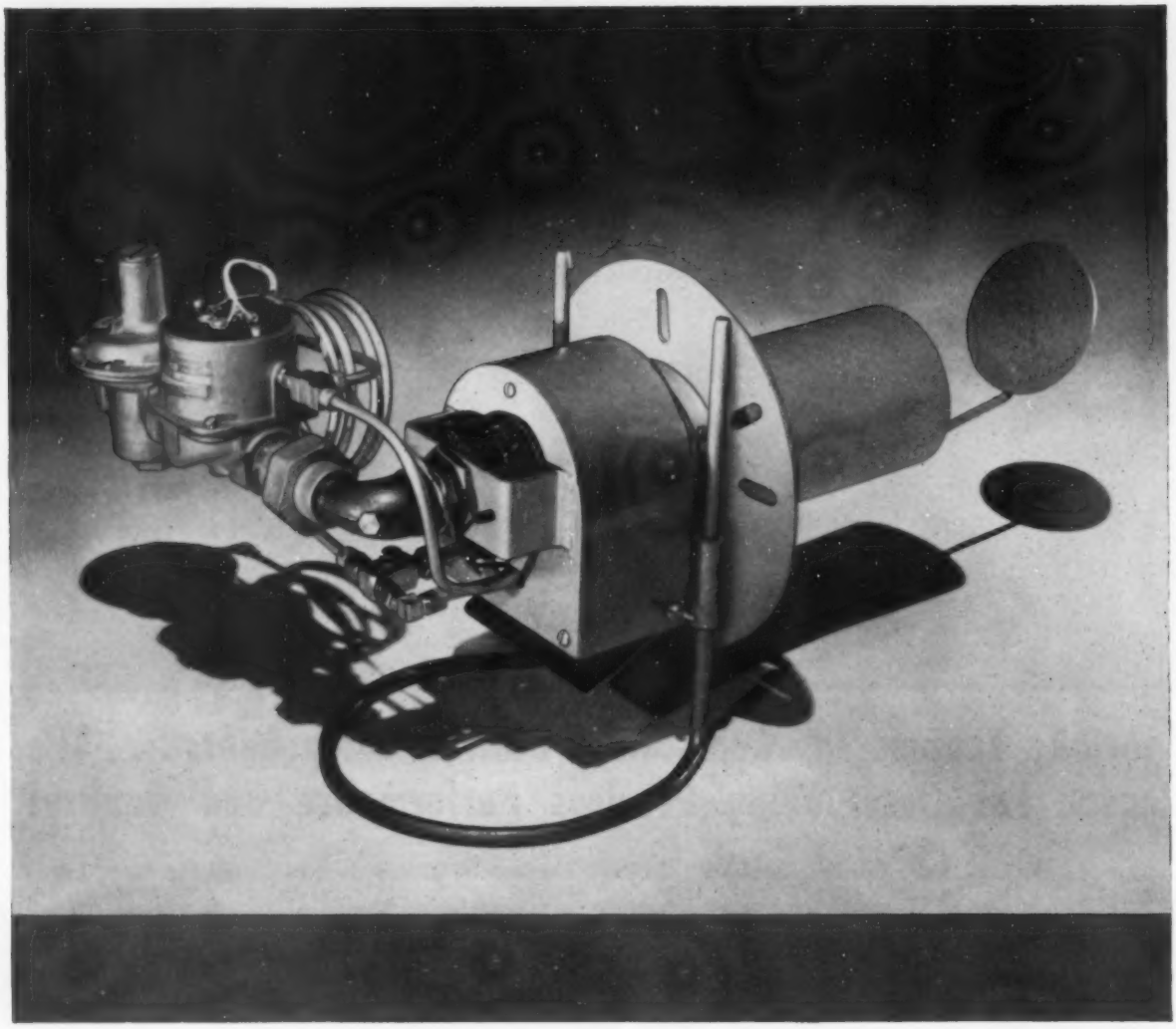
A Barber BURNER



THE Barber GUN-HEAT

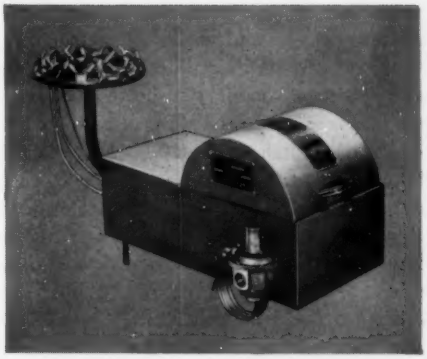
A low-cost quality burner ● Our dealers tell us that the GUN-HEAT not only costs less than any comparable burner but it's also the easiest to install on those ever increasing oil to gas conversions. What's more, they say that they have practically no service calls, and that the overall look of quality and simplicity make it a natural display burner. That's why GUN-HEAT is one of the fastest selling conversion burners on the market today. Three models in this IN series (shown above) are A.G.A. tested and listed from 90,000 to 250,000 BTU/Hr.

FOR EVERY GAS CONVERSION

THE Barber SPREAD-HEAT

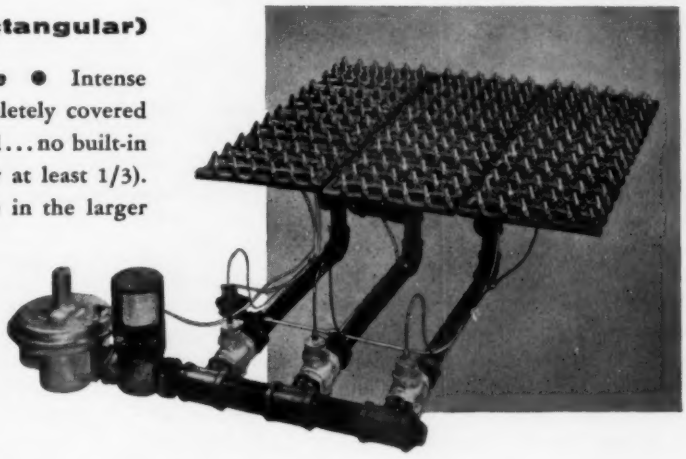
Designed for heating men ● Three models of SPREAD-HEAT cover all domestic conversions. One model UP-2 will convert 90% of all domestic wood or coal furnaces. Here's a burner that's low cost to you; that's easy to install; that requires practically no maintenance; and that has all the features that will sell customers on conversions. A.G.A. tested and listed from 60,000 to 360,000 BTU/Hr. Give Barber a chance to prove these claims . . . write for literature to the address below.

THE Barber JET-HEAT (Round)



For those "Premium" jobs ● Uses exclusive Barber jet principle to get hotter flames at a lower level of heat release in the furnace or boiler . . . most efficient heat transfer so that boilers heat faster. No flash-back . . . no air adjustment necessary . . . easy to install. This TP Series of burners A.G.A. tested and listed from 67,800 to 150,000 BTU/Hr. Write for the complete line of Barber conversion burners, burner units, jets, and accessories to the address below.

THE Barber JET-HEAT (Rectangular)



Thirty-five years of big-job experience ● Intense heat . . . 75% to 95% of fire box area completely covered with burners . . . installed on or at grate level . . . no built-in combustion chamber required (cuts cost by at least 1/3). By incorporating the multiple jet principle in the larger conversion jobs 400,000 to 2,500,000 BTU/Hr., Barber has been most successful in converting thousands of boilers which still serve well after as many as 35 years of continuous operation.

THE Barber MANUFACTURING COMPANY
GAS AND OIL BURNER DIVISION
1052 East 134th Street, Cleveland 10, Ohio

(*Continued from page* 50)

doing business and should be passed along to the purchaser of cooling equipment. Mr. Brooks indicated wholesalers could make use of this by training dealers to exercise the same techniques used by other industries to secure payment. The wholesaler would benefit because the dealer would then be in a better position to pay his bills more quickly.

Fast Payment Urged

Supporting this principle of fast payment for merchandise was T. E. Dooley, who showed taking advantage of the 2 percent discount for payments made within 10 days amounted to better interest rates than any other type of investment. In one case he pointed out by using the discount, a dealer was able to obtain the equivalent of 14 percent interest on money used.

The higher cost of cooling equipment, per unit, has upset the payment practices of a number of dealers because they must wait longer for their money, according to Robert H. Swart. He pointed out it takes longer to install and balance a combination heating-cooling system. Builders and home owners are reluctant to complete their payments until both functions of the equipment have been tested. This, he explained, has placed an added burden on the dealer. In addition, the cost of borrowing money from banks has increased to above 5 percent, he said. Thus, the cost of doing business has risen both at the wholesale and dealer levels. The smaller dealers find that this extra overhead cost is affecting the profit to such a degree that many jobs which would have been profitable are now profitless because of slow paying customers.

Why Nine Dealers Failed

The background of why nine warm air heating-cooling dealers failed during the first three months of 1956 was presented by Meril A. May. Mr. May pointed out that there are over 4,000,000 businesses in the United States and only 11,000 failed during 1955. He did not give the number of failures occurring in the heating-cooling industry. In describing the reasons behind the nine failures, Mr. May said most of them failed because the heads of the firms were not well versed in all the many segments of business management. An analysis showed too many of the dealers started with too little capital, and it was used before the manager could learn management of a dealership. Mr. May said 91 percent of the business failures could have been avoided if the businessmen had known soon enough they were headed for financial difficulty.

The wholesaler-manufacturer responsibility conference was moderated by Arthur M. Vorys, Vorys Bros., Inc., with William L. Troescher, Hesco Corp.; Tom J. Delaney, Waterbury Heating Supply Co.; Francis W. Kerscher, Frank J. Kerscher Co.; Fred R. Green, Heating Wholesalers Co.; J. Orville Garrett, Loman Supply and Equipment Co.; and George F. Laib, Laib Supply Co. acting as panel members. One subject covered was, what a wholesaler should expect from suppliers salesmen. In his comment, Francis W. Kerscher said he liked to see salesmen make a definite appointment and keep it; give complete information about new products; refrain from overselling the product represented; avoid wasting time in visiting; and make a point of finding out how often the purchasing agent wants to see the salesman.

Wholesaler Should Live By Own Rules

Speaking on this same subject, Fred R. Green said the wholesaler should live by the rules he sets for other wholesalers and not ask salesmen for price advantages, and the salesman should not quote different prices to wholesalers competing for the same market. He also believes the manufacturer's salesman should follow a sales plan in presenting his story, making it easier to follow the trend of thought being expressed.

Discuss Suppliers' Traffic Department

Another subject covered by this panel dealt with what to expect from a suppliers' traffic department. Speaking on this subject, William L. Troescher said the manufacturer should set up a procedure for handling shipping invoices, which would get information to wholesalers the day following a shipment. Such a notice should specify the product sent, number of units in the shipment, route of the shipment and expected date of arrival.

Often an order is taken for quantity in excess of actual requirements to obtain a discount. Tom J. Delaney felt that the entire order should be filled at the time of shipment. Too often, he said, the size of a partial shipment is not enough to complete the orders being received from dealers.

Bright Showroom Display Is Necessary

A third subject was discussed by this group, "My responsibility to my suppliers." This was covered by J. Orville Garrett, who felt a wholesaler should attempt to obtain maximum volume from the area he serves. To achieve this goal he thought the wholesaler should maintain a good display in his showroom. Also, countermen should be instructed in ways to sell more merchandise to dealers coming to the showroom. He also felt the wholesaler should provide space for the supplier to hold sales meetings for local dealers, and the wholesaler should use all of the literature supplied by the manufacturer. The last comment pointed out the importance of handling only non-conflicting lines.

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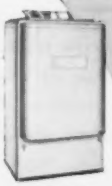

2 or 3 Ton Year 'Round Air Conditioner Air or Water Cooled Gas or Oil Fired.

2 or 3 Ton Counterflow Year 'Round Air Conditioner Air or Water Cooled Gas or Oil Fired.

"A"-type Cooling Coil for use above Basement or Utility type Furnace.

3 or 5 Ton Water Cooled Add-On Summer Air Conditioner.

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2, 3 or 5 Ton Air Cooled Condensing Unit for Outdoor or Indoor installation in connection with separate Cooling Coil.

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Thousands of successful heating and air conditioning contractors have learned that they can shop far and wide, yet not match the quality or competitive prices of Moncrief equipment. These dealers have also learned — as you will, too — that they save time and receive better service from their Moncrief Wholesaler.

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HEATING AND AIR CONDITIONING UNITS — MONCRIEF — FURNACE PIPE AND FITTINGS

New England Sets Service Schools

THE 12TH ANNUAL OIL HEAT Service School, presented by the Oil Heat Institute of New England, will open its fall series of instructions in Worcester, Mass., Sept. 10, followed by schools in Claremont, N.H., Sept. 11; Concord, N.H., Sept. 12; Augusta, Me., Sept. 13 and Portland, Me., Sept. 14. The school will run for 10 weeks in each of the cities.

The second group of schools will open in Salem, Mass., Jan. 7; Framinghani, Mass., Jan. 8; Hyannis, Mass., Jan. 9; Malden, Mass., Jan. 9 and Quincy, Mass., Jan. 11. This group will run for 10 weeks.

And the third group will open in Springfield, Mass., March 18; Pittsfield, Mass., March 19; Hartford, Conn., March 20; Bridgeport, Conn., March 21 and Providence, R.I., March 22. This group of schools also will run for 10 weeks.

It is expected that about 1500 students will enroll in the schools compared to just under 1400 last year. The course will be completely new from last year.

The first four weeks in each group will be covered by a series of lectures on controls, while during the fifth week ways of making a good oil burner installation will be presented followed by proper service procedure and annual clean up.

The sixth week will cover troubleshooting on warm air heating installations and the sixth week will be a presentation on servicing pumps. The eighth week will be a presentation on servicing and installing safety controls, such as low water cut offs and water feeders.

During the ninth week the servicing of furnaces and firing equipment of a specific manufacturer will be covered, while in the 10th week the primary controls and motors of a manufacturer will be featured.

Georgia Sponsors Heating Forum

A FORUM ON PROPER heating designs and standards was held recently by John Mauldin, chairman of the state board of Warm Air Heating Contractors in Augusta, Ga. The Sheet Metal, Roofing, Heating, Air Conditioning Contractors' Association of Georgia made a recording of the presentation. Copies are available and will be mailed out in the near future.

NHAW Membership Jumps 64 Percent

MEMBERSHIP TO THE National Heating and Airconditioning Wholesalers Inc. shows a 64 percent increase since April of 1955, according to Gail C. Mason, president of the association and George Sprick, membership chairman.

Along with this growth the NHAW heating and cooling dealer management schools have gained wide acceptance in the nation. Also there are programs of wholesaler management schooling and wholesaler sales training, and a technical training program for summer air conditioning dealers being developed.

Coming Events

Sept. 25—Chicago Warm Air Golf Association tournament. Ruth Lake Country Club, Hinsdale, Ill. Mel Johnson, President.

Oct. 15-17—American Gas Association, annual convention. Atlantic City Auditorium and Hotel Traymore, Atlantic City N. J. C. S. Stackpole, Managing Director, 420 Lexington Ave., New York 17, N. Y.

Nov. 26-27—National Warm Air Heating and Air Conditioning Association, board and committee meetings. Netherland Plaza Hotel, Cincinnati. George Boeddener, Managing Director, 640 Engineers Bldg., Cleveland 14.

Nov. 28-29—National Warm Air Heating and Air Conditioning Association, annual convention. Netherland Plaza Hotel, Cincinnati. George Boeddener, Managing Director, 640 Engineers Bldg., Cleveland 14.

Dec. 3-5—National Heating & Airconditioning Wholesalers, Inc., annual convention. Deshler-Hilton Hotel, Columbus, O. W. R. Bull, Executive Director, 1200 W. Fifth Ave., Columbus, O.

Feb. 7-8—Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc., annual convention. Hotel Severin, Indianapolis, Ind. Frank E. Anderson, Executive Secretary, 439 S. 17th St., Terre Haute, Ind.

Feb. 24-Feb. 28—American Society of Heating and Air-Conditioning Engineers, annual convention. Conrad Hilton Hotel, Chicago. A. V. Hutchinson, Executive Secretary, 62 Worth St., New York 13.

Feb. 24-Mar. 1—International Heating and Air Conditioning Exposition, International Amphitheater, Chicago. Exposition management: International Exposition Co., 480 Lexington Ave., New York 17.

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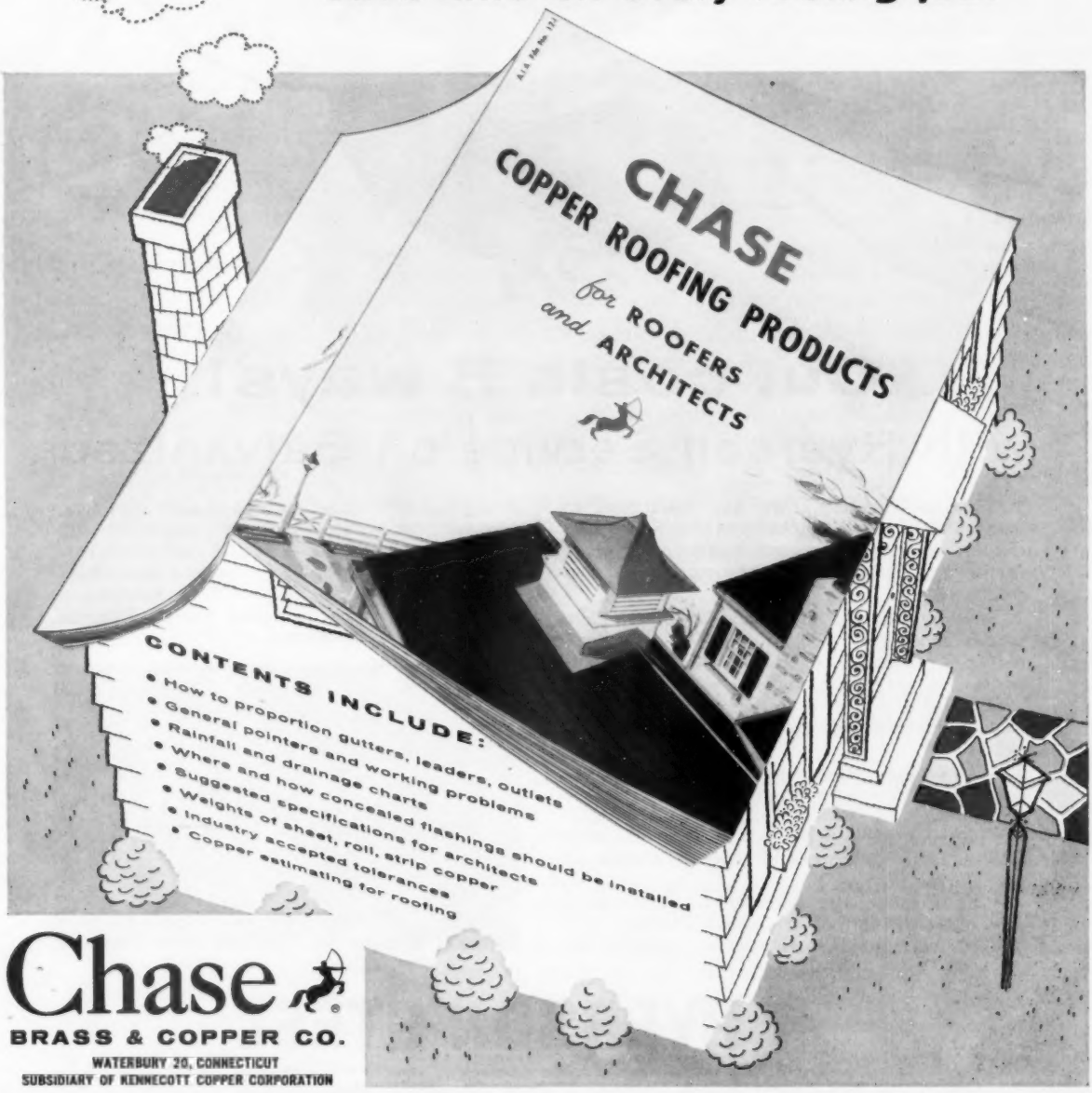
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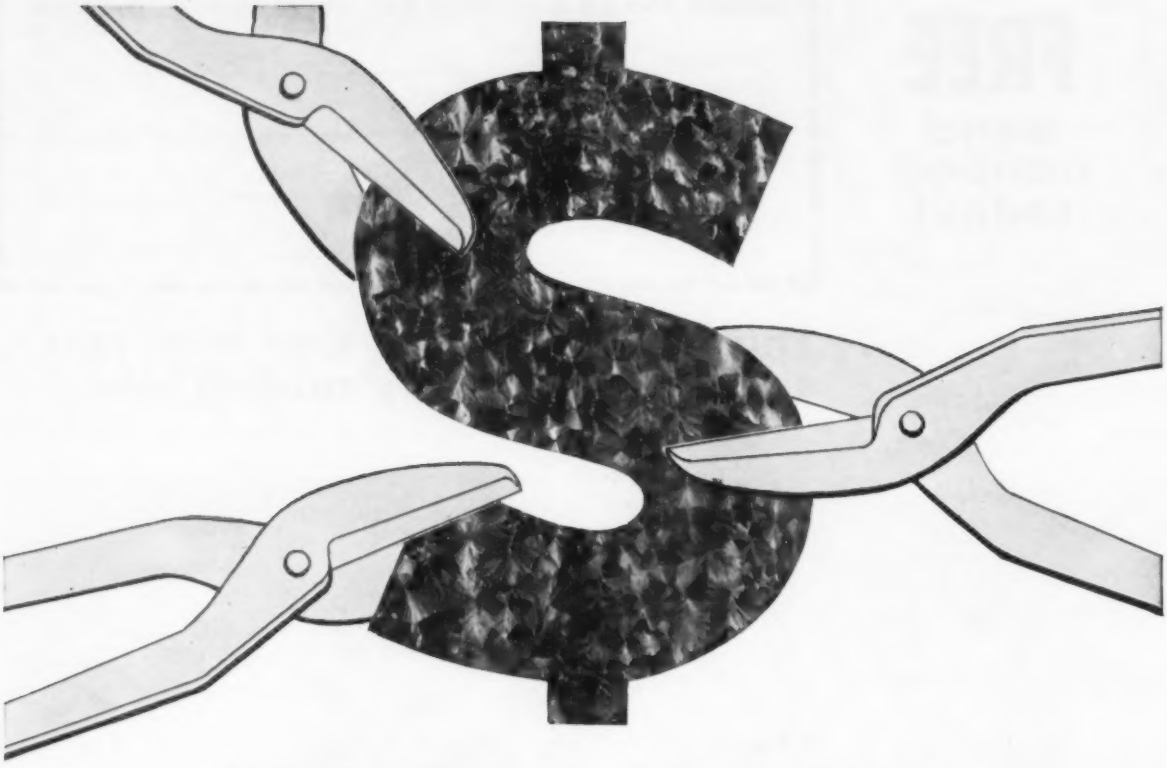

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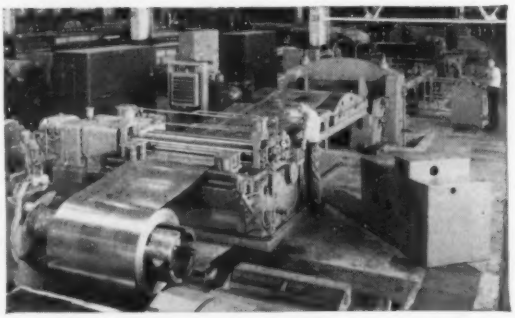

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New Research Data Makes Air Conditioning Sales Easier

IT'S HUMAN NATURE to want maximum value for each dollar spent for anything. This trait can be used as a sales tool to point out the advantages of adding summer air conditioning to an existing warm air heating system or including cooling with the order for the warm air heating system being planned for a new house.

It takes facts and figures to convince the hesitant buyer, and a research group of professors and students from the University of Texas has come up with the answers to many of the questions being asked by prospects. This information was obtained during a series of psychological studies of the 22 families living in the air conditioned village at Austin, Texas and from 22 other families similar in size, income and related characteristics but living in non-air conditioned homes in the same area. The information uncovered makes excellent merchandising information.

When costs of operating the cooling equipment arise, tell the prospect about the 14 wives in the non-air conditioned group of houses who took down their drapes, installed seat covers on chairs and sofas and otherwise "decorated for summer." It's interesting to note that none of the wives living in the Village "decorated for summer" but that 16 commented that they had followed this procedure in their previous homes which were not summer air conditioned.

Another expense-saving item for those living in the Air Conditioned Village was the decrease in the number of times a week the family went to movies, restaurants and the club "just going out to be comfortable." This amounted to an average difference in expenditure per week of $5.80.

A point that can be made to the male prospect who indicates he wants to take up a hobby but never seems to have the time or doesn't feel like following this desire when the weather is hot is an interesting fact uncovered by the research teams. A tabulation shows that nine members of the families moving into the Air Conditioned Village took up hobbies after they moved into the air cooled houses.

People who enjoy entertaining friends have more time for this activity. It was found that adult guests spent an average of 14 hours a week with families living in the 22 summer air conditioned homes as compared to five hours per week spent in non-air cooled homes. The number of children guest hours was 27 per week in the summer air conditioned home against seven hours per week spent in non-air cooled homes.

Women living in summer air conditioned homes have more time for membership in social clubs. Sixty two percent were members of women's social clubs, whereas only 36 percent of the women living in non-air cooled homes belonged to clubs of this type.

Women living in summer air cooled houses also found less time was required for household duties. As an average, during summer months these women spent 1.5 hours per week doing laundry, 3/4 hours per week dusting and 4 hours doing general cleaning. Women living in non-air cooled homes spent 3 hours weekly doing laundry, 2 1/3 hours weekly dusting and 6 hours a week on general house cleaning.

Other advantages of the summer air conditioned homes were better sleeping conditions, more comfort, closer association among family members as a group, more nutritious meals eaten by family members and a greater number of hours spent by children in the house.

The sales points listed here are outstanding reasons why people need year 'round air conditioning to enjoy family life fully. This scientific evidence is indisputable and can be further developed at a local level to tie in local support to sales presentations.

This Dealer Uses ARTISAN as Promotional Tool

Heating and cooling prospects accept recommendations made by dealer who uses articles reported in American Artisan as patterns for his engineering techniques

AMERICAN ARTISAN is used as a selling aid by Dayton dealer Pete Ross

THE MANAGEMENT TEAM, Walt Meisinger (left) and Pete Ross go over a proposed layout. American Artisan is kept nearby for quick references

A SALES PROMOTION PROGRAM based on the use of recent issues of American Artisan has been put into operation by Pete Ross, partner, Meisinger and Ross, Inc., Dayton warm air heating-summer air conditioning dealers. The sales approach is opened by showing the customer heating or cooling installations as reported in Artisan in which certain paragraphs of the text have been underlined in red pencil to emphasize the sales story being told. Mr. Ross points out to the prospect that these are recommended procedures, and the Meisinger and Ross Co. follows these procedures when designing heating or cooling systems.

After going through several issues of the magazine to point out the work that needs to be done and why short cut methods cannot provide the satisfaction the customer expects, the magazines are again referred to. This time manufacturers' advertising is used to show that the manufacturer believes in the editorial policy of American Artisan and that it subscribes to the principles expounded. The connection between the editorial articles and the wording of the manufacturer's advertisement is made to show that the product recommended is built according to industry standards and will perform as rated.

SLIDE PROJECTOR ADDS influence to sales presentation. Enlargement helps prospect to visualize how equipment will fit his needs

Sales Approach Found Effective

It has been found that prospects are influenced by this sales approach. One prospect for a conversion burner liked the explanation so well that he not only gave his own order but recommended that a friend call Meisinger and Ross. This one customer alone was the source of a number of leads that resulted in five heating system sales within a two month period. In nearly every case satisfied customers are the source of the company's sales leads.

The technical approach plus its connection with the manufacturer's trade advertising is backed up with several other good sales clinchers. One of these is the use of a three-dimensional viewer and a portable slide projector and screen. Both projectors are seldom used for the benefit of the same prospect, as it is felt that one thorough demonstration is more effective than two or three sketchy presentations.

3-D Helps Sell Installations

The three-dimensional viewer and slide projector are supplied with photographs obtained from actual installations made for recent customers. The slides which are most closely related to the interest of the prospect are taken from the library and arranged to show pertinent points which guide the prospect's thinking toward a visualization of how a heating or cooling system installed according to the specifications outlined in American Artisan would fill their needs and interests.

Often before-and-after shots are shown in three dimensions to help point out how the ultimate installation will appear, because flat line drawings or two-dimensional photographs cannot clearly picture the actual transformation. The three-dimensional photographs complete this link for the prospect.

The three-dimensional camera and portable projector assembly cost about $350, but the acceptance accorded the sales presentation by the prospect make this cost worthwhile, according to Pete Ross, who is responsible for the company's sales program and engineering.

Walt Meisinger handles the office and shop work. Keeping the books, purchasing and supervising the shop work are all part of the day's work for Mr. Meisinger, who says if more dealers would use a better system of bookkeeping, there would be fewer problems of meeting competitive bidding. He believes too many dealers overlook essential parts when quoting prices for jobs. He has a set procedure for determining the costs involved on every job and follows the recommended practice of writing down every item used on the job and pricing it, based upon raw material costs plus the mark up required to cover fabricating costs, overhead and profit.

The company offers complete service to its customers and prospects. It fabricates its own duct work, sells and installs any size warm air heating system, sells and installs summer cooling equipment for residences and small commercial businesses and does stainless steel kitchen work (some of these services are illustrated).

COMMERCIAL HEATING AND COOLING system includes a 15 hp packaged cooling unit and direct-fired duct heaters in the supply trunk duct

SALES PRESENTATION IS supported with "before" and "after" photographs viewed through a 3-D stereoscope

REMODELING WITH STAINLESS steel for kitchen and service section of a drive-in restaurant was one of the projects of Ross and Meisinger Co.

Diagnosis and Cure of Motor Ailments

Keep Cooling Systems Healthy

As new and better motors are developed, the cooling dealer's servicemen must be trained along the same lines as doctors — from anatomy to surgery — to insure the long life of the "patient"

By T. N. Schierloh
Delco Products Div., General Motors Corp.

LAST MONTH in discussing the prominence of the a-c electric motor in the air conditioning picture, we suggested that a serviceman's training program is similar to that followed by a doctor. In other words, he must develop know-how in four categories before he is capable of becoming the master of his work. We compared these fields as follows:

1) Anatomy and physiology (product knowledge).
2) Hygiene and health (protective maintenance).
3) Diagnosis (trouble shooting).
4) Therapy and surgery (adjustment and repair).

In the previous article we covered the first category, reviewing the various types of a-c motors.

The second phase of training listed in the four basic requirements is motor hygiene and health. Here we are concerned with the environment in which motors will run best; what poisons or diseases will shorten their lives or destroy them; and what preventive medicine can we use. This we call planned preventive maintenance and a good education in this phase of the business will keep us out of a lot of trouble.

Watch for 'Poisons'

There are three "poisons" that endanger or shorten the life of an electric motor. They are:

1. Moisture.
2. Dirt or dust.
3. Oil (in the wrong place).

Moisture in motor windings, either from dripping or by condensation within the motor presents the greatest hazard. In addition to greatly lowering the insulating value of the wire coating, water absorbs many other harmful fumes and chemicals to soften and destroy the insulation.

Larger motors should be tested at regular intervals for resistance to ground.

Dirt and dust form an insulating blanket or coating which holds the heat in the motor until it may reach temperatures that cause breakdown. The life span of most insulating materials is a product of the time and the temperature. If motor temperature is high its life will be short.

Most dust and dirt is abrasive in nature and if allowed to accumulate will work its way into bearings.

Dirt in the windings has a capillary effect of drawing moisture and oil from the bearing housings. Servicemen should take time to blow dust out of motors with low pressure, dry air or with hand bellows. It's one of the best prescriptions for a healthy motor.

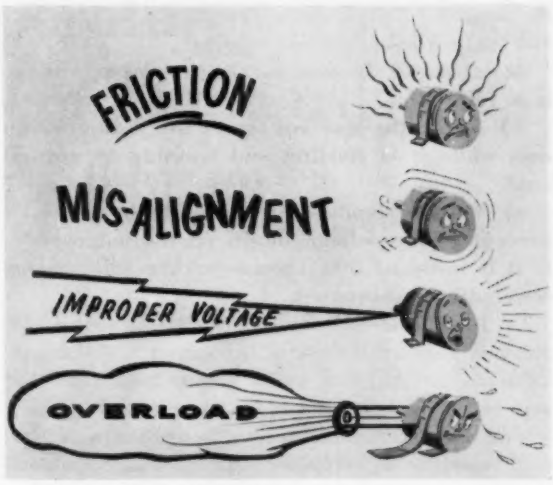
Stray oil on a motor is usually the result of defective seals or in most cases, careless lubrication practices. Motor repairmen say that more motor failures can be traced to too much oil than not enough. Oil softens the winding insulation, the rubber mounting parts — it gets in the switch mechanism, collects dust and starts fires.

A word of caution, however, about cleaning oil-soaked windings. Don't soak windings in any type of solvent. Clean with a hair bristle brush dipped in cleaning solvent. Blow out with low pressure air and oven dry at 120 F for 6 to 8 hours.

These 'Diseases' Are Fatal

In addition to the poisons just mentioned, there are four diseases that can prove fatal to a motor. They are:

1) Friction.
2) Misalignment.
3) Improper voltage.
4) Overload.



FOUR "FATAL DISEASES" in electric motors can be cured by the air conditioning "doctor" through careful protective maintenance

Every motor bearing (except special plastic types) requires a film of oil to keep the stationary and moving metallic surfaces apart. If this film is destroyed by an insufficient supply of oil — or wrong kind of oil — or foreign matter in the oil supply, or so much thrust on the bearing that the film breaks down, there will be a bearing failure.

Protective maintenance of bearings is guided by three basic rules:

1) Always use the manufacturer's recommendation for type of lubricant and frequency of lubrication.

2) Don't over-lubricate. In addition to the stray oil problem, common with sleeve bearing motors, overgreasing of ball and roller bearings produces friction and heat because of the energy required to push the grease around, and heat will usually destroy the bearing.

3) Keep records of lubrication and bearing inspection on large equipment.

Sometimes failure from friction is caused by misalignment, which not only attacks the motor but also the drive mechanism and the driven equipment.

For preventive maintenance against misalignment—

1) Periodically check alignment. Remember it can change in time due to warping and settling of the mount or loosening of the mounting bolts.

2) Maintain proper alignment and tension on V belts and use matched sets in multiple belt applications.

3) Check balance and mounting of units with excessive vibration.

Improper voltage is the third killer of this group. There are two types: over-voltage (high voltage) and under-voltage (low-voltage). High voltage imposes additional heat and work loads on the motor. Low voltage causes

the motor to draw excessive current and to "pull out" and fall back on the starting winding.

Maintenance inspection for improper voltage is as follows:

1) Check the line voltage at the motor terminals while it is starting and running at normal load.

***a*) Voltage should be within plus or minus 10 percent of the voltage shown on the name plate. If it is more or less, the motor life will be correspondingly shortened.**

The last disease—overload—is common in the air conditioning industry because of two factors: 1) Many installations are operating under heavier loads than they were originally designed for; 2) There appears to be a general misunderstanding as to what constitutes an overload, especially on compressor applications. Since compressor motors are expected to carry temporary loads beyond their nominal rating, the only way to make sure of correct loading is to measure the actual wattage input and refer to the manufacturer's service manual.

The result of overload is overheating which increases as the square of the excess current of overload.

There are two important protective maintenance rules regarding overload:

1) Always take time to find the actual cause of the overload and take nothing for granted.

2) Never increase the value of the overload protectors without first consulting the manufacturer.

The third phase of training is the diagnosis or trouble shooting category. There is no substitute for know-how. Three aids for the serviceman are:

1) Records.

2) Instruments.

3) Procedure.

Good Records, Procedures Are Vital

One of the most valuable assets a service organization can have is good records, and none is as valuable as the case history card. The benefits of this type of record are fourfold:

1) It provides an accurate report on the service call, in writing, while the details are still fresh in mind.

2) It makes the next service call easier and more efficient when the history is known about the installation or similar equipment.

3) It provides valuable data in the event of extended warranty litigation or adjustments.

4) It helps make recommendations to the customer for future protective maintenance and service programming.

Every mechanic knows the value of the right tools for the job.

People are no longer impressed by a doctor who bases every diagnosis on having a patient stick out his tongue; neither is the air conditioning customer satisfied when a mechanic appears on the job without proper diagnostic tools. The responsibility of the serviceman is to select the proper tools—then see that they are used.

The third step in diagnosis is the correct procedure. Too often the same remedy is suggested for such complaints as: it's running hot; it's blowing fuses; it won't start or accelerate properly; it's making strange noises. The poor diagnostician will recommend that the motor be replaced. And he's often wrong!

Field engineers' service reports indicate that almost 90 percent of the motors claimed to be defective are not. And although this may seem elementary, reports show one or more of five important factors have been overlooked when servicemen arrive on the scene:

1) The motor has been improperly connected (new installations, mostly).

2) No check has been made of the motor terminal voltage at start and full load.

3) No reading has been taken of the motor load in watts or the current in each leg of the polyphase circuits.

4) No continuity check has been made through the system's protective devices and controllers.

5) Surrounding temperature and moisture conditions which might require a special motor have not been taken into consideration.

There are other oversights of course. Therefore, when a serviceman conducts a routine inspection by following a regular procedure he will eliminate the cause of most motor complaints. Experience has proved that when servicing a burnout, the serviceman should be doubly sure the cause is correctly diagnosed.

Integrity Survives Competition

The fourth phase in the training program deals with the therapy or surgery that will get the equipment back in service in the shortest amount of time and at the least expense. There is no substitute for absolute honesty with the customer at this point. This is not a business of trading labor and parts for money—it is service with integrity that alone can survive competition and "economic adjustment" periods.

In the repair and adjustment phase of business, three important factors enter into the picture:

Time • Cost • Experience

These factors determine:

1) To repair or to replace?

2) Do it on the job? Or is shop repair required?

It is important to know what minor motor repairs can be made economically on the job. Generally, on-the-job repairs cannot go beyond replacement of capacitors, relays, thermal protectors, brushes and switches. The only economical way to handle major motor repairs is to make use of a completely equipped motor repair station using factory replacement parts.

As in any type of service business, an adequate stock of service replacement parts for motors is essential to build a reputation for reliability and competence.

Figure Floor Temperatures, Drafts In Heating System Standards

Two intangibles which must be subject to the dealer's know-how round out the arbitrary set of standards designed to help the heating dealer determine the total effiiciencies of his heating installations

By S. Konzo and H. D. Bareither
University of Illinois

PEOPLE COMPLAIN when the floors are cold, and people complain when they have a "hot foot." Undoubtedly, floor surface temperatures affect the comfort of the occupant, regardless of whether the air temperatures are satisfactory or not. Difficulties arise, however, when we attempt to set standards of acceptance that can be supported by research findings.

About all we can state with some assurance at the present time is that some temperature below about 55 to 60 F for the floor surface is considered cool by many people, that some surface temperature about 80 to 85 F is considered too warm, and that a range of temperatures between these two extremes would be acceptable to most people. To a large extent the reaction of the occupant is affected by the nature of the floor covering, the type of footwear, and the degree of insulation provided by stockings.

Standards Based on Variables

For example, a thick pile rug at a temperature of 55 F may not feel as cool as a concrete floor at the same temperature, since the rug does not permit as rapid a rate of heat transfer from the foot to the floor. Furthermore, the temperature of the foot and of the toes varies over an extremely wide range, and is not a constant as is the center of the body. Hence, the rate at which heat will be transferred from the foot to the floor will depend on the temperature of the foot, which in turn will depend upon the adjustments made by the body to the surrounding air.

In other words, more than one set of temperature standards may be necessary, depending upon the nature of the floor covering and the conductivity of the material in the sole of the shoe. On top of this difficulty, we encounter the difficulties in measuring floor surface temperatures. For this purpose, glass thermometers are not suitable, whereas thermocouples are not practical for the heating dealer to use. It becomes obvious, therefore, that the setting of standards for floor surface temperatures will have to be postponed until more precise values can be established by experiments.

People are most positive concerning their dislike of drafts, but people differ considerably in their reactions to such factors as:

a) The velocity of air motion that is objectionable.

b) The temperature of the air in motion.

c) The steady or intermittent nature of the air motion.

d) The location of the draft sensation on neck, face, or ankles.

Some experiments dealing with localized drafts at neck and ankles indicate that air temperatures and air velocities must be considered together in dealing with sensations of drafts.

In air distribution studies conducted at the University of Illinois for a project sponsored by the American Gas Association, the following arbitrary standard was established by the staff and was used in comparing the performance of a large number of registers:

"Air with a velocity less than 15 fpm is considered stagnant, whereas velocities greater than 35 fpm are considered excessive."

The upper limit of 35 fpm used for the Illinois research program is a stringent one, and is less than the frequently quoted value of 50 fpm. From the standpoint of the heating dealer it will be difficult to measure velocities as low as 35 and 50 fpm accurately. An instrument called a hot wire anemometer is available for measuring low air velocities, but the instrument is too expensive to be practical for any but the largest heating dealer. We are forced to admit, therefore, that although we can set a standard temporarily, it will be difficult for the heating dealer actually to measure velocities in the field. About the best that can be done in the field is to blow tobacco fumes into areas where the air motion is high, and try to estimate the distance covered by the smoke in a minute's time.

Turn the page for summary of proposed heating standards

BEGINNING IN THE February, 1955 American Artisan, the authors have presented a series of articles proposing a set of standards which the dealer can use to evaluate the performance of his heating installations and on which future improvements in heating systems might be based. Here's a brief summary of the standards presented for house, furnace and system . . .

How Do Your Heating Jobs Stack Up?

By S. Konzo and H. D. Bareither
University of Illinois

IN PAST ISSUES of American Artisan we have attempted to present a set of standards for forced warm air heating systems, by which we can measure the performance of any system in the field.

Consumer surveys are not too helpful to our cause, since the ordinary homeowner is not well qualified to tell us what is good or what is right about a heating system. To a large extent the reaction of the homeowner to a given system will depend on his past experiences. A man may express delight with a kerosene stove if he has just gotten rid of a wood burning stove. To ask such a man about the merits of a warm air panel heating system would be useless, since he probably would not understand what you were talking about.

Progress Must Be Based on Fact

We cannot rely upon the customer to tell us which way the heating systems should develop. In fact, no professional man would ever depend too much upon the recommendations of an untrained observer. Neither can we depend upon the word of the heating dealer alone, no matter how sincere or well versed he may be, if his statements are not based upon actual measurements.

We can only measure progress if we have measurements — numerical values that tell us how much we have changed things. Measurements alone, without standards of reference, do not tell us whether we are making progress or going backwards. Hence, although some may disagree with some of our proposed standards, and some may consider some of them unattainable, we feel that someone has to take the first arbitrary step.

Standards Are Individual

The fact that we show more than a dozen different standards for house, furnace, and system does not imply that it is necessary to test each item for each house and come up with an evaluation. This would require more time than anyone can afford to spend. Nevertheless, at some time in his practice the dealer may be called upon to measure one of the items in the complete list. When that time comes, these reference notes will serve him.

Consider House Construction

The heating dealer has comparatively little influence as far as building construction is concerned. He is required to furnish a heating system for houses which are made available to him. However, a dealer will frequently be consulted by the builder, the homeowner, or the architect about items such as moisture protection, insulation requirements, and others. In many cases the heating dealer is held responsible for condensation on sidewalls, dry rot of wood in a crawl space, ice formation on windows, and high fuel bills. The heating dealer is in a much stronger position if he is able to make suggestions for changes in house construction at the time the plans are being made, instead of later.

Furnace Standards Based on CAC Principle

In the check list presented in Table 1 (next page), the six items in the second group show those referring to furnace performance. These items will show how closely the principles of Comfort Air Circulation are being adhered to in the given installation. If the blower operates almost continuously in moderately cold weather, if the rate of fuel input to the furnace is not excessively high, and if the measured flue gas losses are reasonable, the dealer has assurance that the plant was left in reasonably good adjustment. This last checkup is as essential in a furnace installation as a motor tuneup is necessary for an automobile that leaves the dealer's showroom.

TABLE 1—SUMMARY OF SYSTEM PERFORMANCE

A. HOUSE CONSTRUCTION

1. Weatherproofing and insulation	——Btuh per sq ft of floor area
	——Btuh per sq ft of envelope
2. Moisture conditions in house	——Percent RH on —— day
3. Slab floor construction	——In. insulation at edge
4. Moisture conditions in crawl space	——Percent RH
5. Construction in crawl space	——Vapor barrier on ground

B. FURNACE PERFORMANCE

1. Continuous blower operation	100 percent on —— day (estimated)
2. Adjustment of fuel input	——Percent reserve on design day
3. Combustion efficiency	——Percent flue loss
4. Venting of flue gases	——
5. Noise of system	——
6. Static pressure	0.——In. on warm air side
	0.——In. on return side
	0.——In. total external to unit

C. SYSTEM PERFORMANCE

1. Room temperature control	——Deg F variation during cycle
2. Temperature distribution between rooms	——Deg F variation between rooms
3. Temperature differential from floor to 30 in. level	——Deg change indoors for each 10 deg change outdoors (see note)
4. Temperature differential from floor to ceiling	——Deg change indoors for each 10 deg change outdoors (see note)
5. Floor surface temperatures	——
6. Drafts from air circulation	——

Note: **The temperature differences given in C-3 and C-4 are the degrees change in the indoor air temperature differences that may be expected for each change of 10 deg of outdoor temperature.**

System Standards Stress Temperature Control

Six items are shown in Table 1 for measuring system performance. Those items which refer to temperature control and temperature stratification are of greatest concern to the home owner. Undoubtedly, these are the items which home owners refer to as "warm all over".

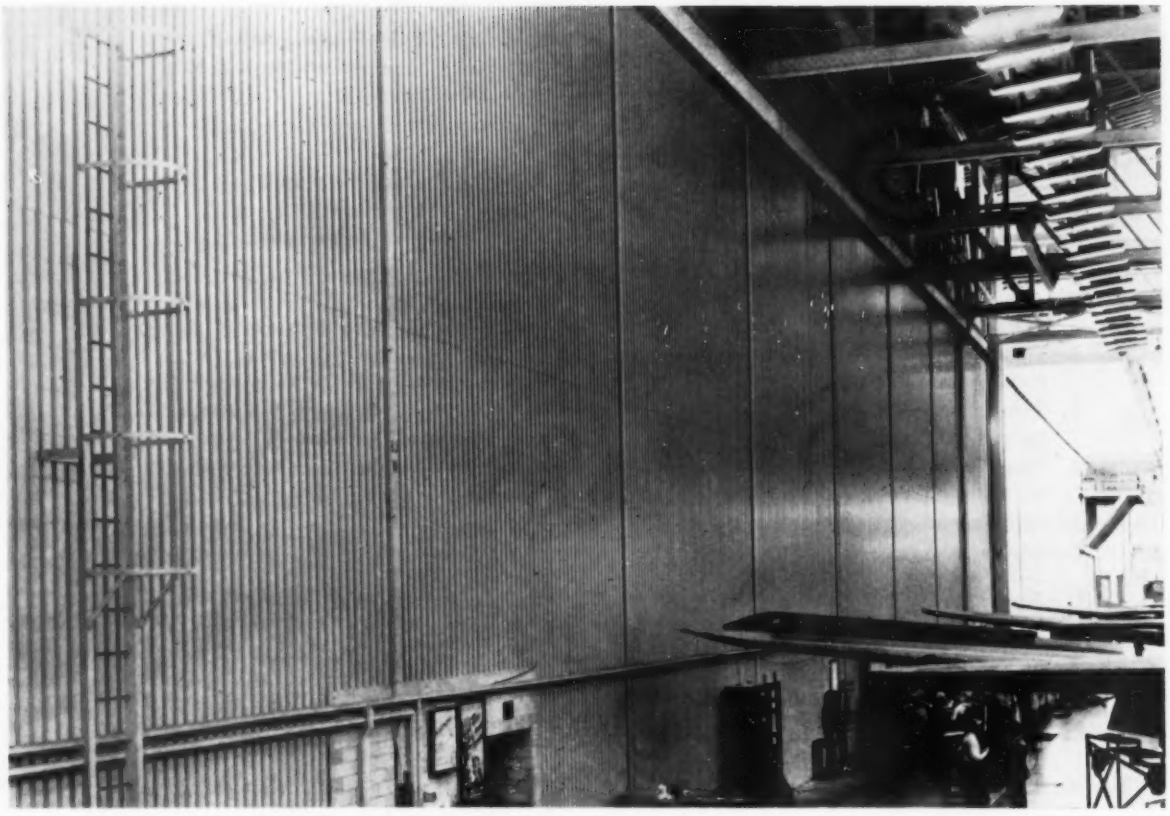
Good Practice Is Not Enough

In times to come when most manufacturers will want to consider a "bonded performance" or "guaranteed satisfaction" deal with each installation, it will become necessary to consider some of the items shown in the check list (Table 1). The statement that a system has been designed in accordance with accepted commercial practice or has followed the rules written down in an installation code is not sufficient.

The work at the Research Residences has demonstrated time and again that good equipment and good installation practice alone are not enough. The manner in which the burner and blower are adjusted and the controls are set will mean the difference between a poor job and a most acceptable one. A forced warm air system is extremely dependent upon controls for satisfactory operation. As has been mentioned previously, it is not possible to store heat in the circulating air, and heat must be generated only when needed and at a rate that is just sufficient to handle the requirements of the building on a given day. Hence, the time is coming when standards of performance such as those proposed will undoubtedly be accepted by the heating dealer.

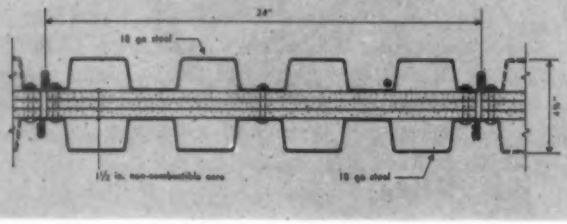
Table 1 is a check list for field analysis of heating systems. Values measured on the job can be compared to standards outlined in this series of articles.

Safety Features Build Fire Walls and



LARGE MANUFACTURING PLANTS and public buildings are likely markets for fire walls. Added advantage of fluted fire walls is that they can be dismantled and reassembled when relocation is desired due to plant expansion or modification

(Photos courtesy of H. H. Robertson Co.)



Fluted zinc clad steel sheets on provide fire protection and save

Specialty Market for Escape Enclosures

Here's a field some contractors may have overlooked, which not only fills in the gaps between peak production periods but also provides a good profit for sheet metal contractors

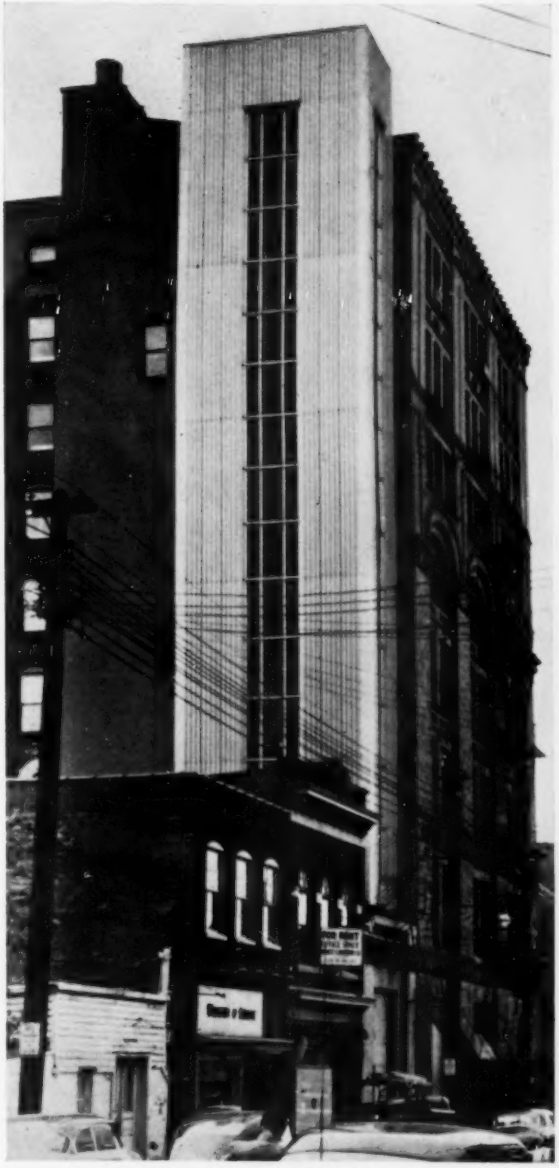
SHEET METAL CONTRACTORS looking for additional work will find a market for fire walls and walled fire escape stair wells a profitable source of income. The best prospects for these products are manufacturing plants and large buildings. The Chas. Wuichet Co., Dayton, O. has made a specialty of this type of work. The figures and information given here are used to figure a job by Harold Lyle, president of the company, and his outside superintendent, Dave Cullars.

Inside fire walls and stair well walls are figured at $2.10 per sq ft installed. This does not include the framework for supporting the partitions or any other structural iron work involved. Structural work is figured separately or installed by others.

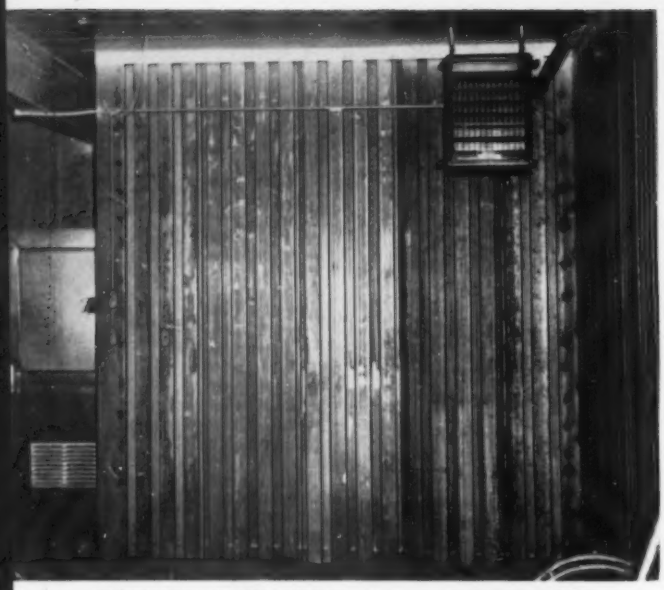
Zinc Clad Steel Sheets Used

The most common construction used for this work is a 4⅝ in. thick panel with 18 ga fluted zinc clad steel

each side of a non-combustible core customers money in insurance rates



FIRE ESCAPE is enclosed in fire resistant wall not only for adequate protection and consequent savings in fire insurance, but also to minimize maintenance problems



INTERIOR STAIR WELLS also can be protected by metal paneled fire resistant walls. Panels are in 2 ft widths, are made in lengths required by application

FIRE DOORS ARE USED in conjunction with fluted fire walls where complete protection is required. Doors are fabricated in the shop, sent to job complete

sheets on each side of a 1½ in. non-combustible core. The panels are 2 ft wide and are made in lengths to suit the specific application.

A 36 in. sheet is used to form the fluted sections, each flute being 2½ in. long on the side next to the insulation, 1 9/16 in. deep and 3 in. long on the side farthest from the insulation. The ends are formed to provide an overlapping joint. Thus, on one end the sheet is bent at a right angle to the flute for a distance of 1 in. and at the other end a looped seam is bent to overlap the right angle end of the adjoining sheet, forming a standing seam where two panels are joined. Sheets used for both sides of the panel are made in the same manner.

The panels are held together by zinc coated steel bolts, one row along each end of the fluted sheet and one row in the middle flute. The bolts are spaced about every 2 ft, depending on the length of the panel.

Fluting Minimizes Fire Hazard

Fluting the metal helps make the panel more fire resistant because it provides an air space between the insulation and the raised edge of the flute. Air can circulate freely between the insulation and any source of heat, thus reducing the temperature of the insulation.

Walls of this type are also easily dismantled and moved to other locations for reassembly when plant modifications make such relocation advisable.

Fire Escape Enclosures Save Customer Money

Another use of this type of panel is the outside fire escape stair well. Modern construction methods call for enclosed fire escapes in office buildings, schools and hotels. However, there are large numbers of older buildings which still have their fire escapes clinging to outside walls. In many cases, insurance rates are reduced when this type of fire escape is enclosed with a fire resistant wall. Maintenance is also reduced. Both advantages are good selling points when proposing to a prospect that the fire escape be enclosed with a metal panel wall.

Fire Doors Can Be Fabricated in Shop

Another source of business for the sheet metal contractor is the fabrication of fire doors for use with metal panel or masonry walls. The Chas. Wuichet Co. figures around $4 per sq ft for this type of work when the door is about 10 ft square. The size of the door actually determines the basis for setting the price, larger doors being slightly lower in cost per square foot than smaller doors.

Fire doors are fabricated in the shop from 22 ga galvanized sheets with all hardware set in place before delivery to the job. The hardware includes pulley hangers, pulleys, cable bracket, bumper shoes, guide roller strip, handles and horizontal flat support strips.

Prefabricated walls are available from a number of manufacturers listed in the January American Artisan, page 64*d*.

CLINIC FOR ADVANCED SALESMANSHIP

How to Overcome Prospects' Buying Objections

The dealer's heating and cooling salesmen should be trained to think of objections as mere obstacles encountered in the course of the sales presentation

By Robert G. Mihan
Merchandising Consultant

THE WORD "OBJECTION" as it applies to sales activities should mean no more to the dealer's heating and cooling salesmen than an obstacle which must be overcome to help the prospect decide to become a customer.

While it is true that prospects' objections should not be thought of as insurmountable, they should be handled properly to prevent their becoming real prejudices which are more difficult to erase from the prospect's mind.

Many of the prospect's viewpoints are not even real obstacles, but quickly formed ideas which the prospect wants explained. When properly covered, these viewpoints cease to be stumbling blocks and may be converted into favorable impressions about the company and its products in the prospect's mind. As each negative viewpoint is transformed into a positive impression, the prospect's interest becomes keener and his mind is opened to the salesman's presentation.

Often a prospect may object to buying when he is first asked because the salesman has not determined exactly what the hidden objection is, even though he has covered his entire sales presentation to the point of asking for the order. Usually it turns out the salesman did not get some particular point across fully in his discussion.

A prerequisite of professional salesmanship is the ability to recognize a hidden objection.

Ask for the Order

Probably the best way to determine whether the prospect's objections have been overcome and the sales presentation is being favorably received is to ask for the order. If the prospect refuses to buy the product at that point, it's time for the salesman to review the presentation to determine where he failed to overcome an objection completely. It is at this point that the prospect's objections usually can be placed in one of two categories:

1) The prospect's point of view.

2) His prejudices and opinions.

The first category, as we have said, is comprised of objections which can be overcome by correcting certain impressions. Often viewpoints are formed on the basis of lack of familiarity with heating and cooling equipment. Frequently too, the prospect makes hurried negative statements in order to get rid of the salesman. In this case, of course, the salesman steps up his presentation until he creates enough interest to replace the prospect's negative viewpoints with factual information which will make the prospect want to learn more about the product.

Dispel Prejudices Carefully

The objections, based on prejudices and opinions, are more difficult to handle because unlike viewpoints which are not deeply rooted in the prospect's mind, prejudices and opinions are definitely established. They are formed by actual predetermined ideas and are based on a certain amount of thought. These ideas may take the form of a definite prejudice against a certain type of heating equipment, a specific make, or a certain dealer. When prejudices are firmly set, the prospect will require special handling and each point will have to be proved to him diplomatically. Any attempt to force the prospect into a decision will very likely lose the sale. Only when the prejudices have all been replaced with positive ideas can the sale be closed.

The best way to overcome objections is to respect the prospect's viewpoint and not challenge his opinion. Normally, when this approach is used the prospect will in turn respect the salesman's viewpoint because he will be aware that the salesman is presenting a logical line of reasoning in a businesslike manner. If the logic is strong enough to cause the prospect to begin questioning his own prejudices, he may become a better audience than a prospect who is merely disinterested.

Anticipate and Avoid

The skillful salesman anticipates objections and neutralizes them before they are raised by the prospect. His presentation includes all the factors which pertain to the prospect's comfort and well-being and thereby eliminates the doubts and objections before the prospect has a chance to bring them up as points for argument.

Here, patience is the watchword. The salesman must be willing to explore the entire sales presentation to determine the prospect's real objection.

'Yes, But. . .'

Recognition of the prospect's right to his own viewpoints avoids arguments which could lose the sale. The "Yes, but . . ." approach bridges the gap between the prospect and the salesman. It keeps the salesman in the role of authority yet does not injure the prospect's pride or anger him as would an outright correction. Following are five variations of the tactful "Yes, but . . ." technique:

1) "I can well appreciate your viewpoint . . ."

2) "I understand your position. . ."

3) "Yours is a perfectly natural (or logical) conclusion. . ."

4) "Many of my customers have had the same thought as yours. . ."

5) "You will probably be interested in Mr. Jones' viewpoint. . ."

When the salesman uses these and similar phrases, he is, in effect, agreeing with the prospect but at the same time is offering counsel and advice which will help the prospect form new and more logical conclusions based on factual information supplied by the salesman — in behalf of his product. He is showing respect for the prospect, but he is influencing his viewpoint. Then he follows through by piling up advantages of his company's equipment and services.

Sometimes the prospect's objection is general — he has nothing against the salesman, his product or his company, he doesn't feel he needs or wants or can afford year 'round air conditioning, for example. This attitude opens the door for one of the salesman's strongest appeals — the personalized approach. The closer the salesman can tie his product to the personal life of the prospect, the closer he is to making a sale. He's

How to Improve Salesmen's Techniques

TRIED AND TRUE merchandising methods based on actual experiences by the author and by dealers he has interviewed are presented in this current series of articles as another Artisan feature, "Clinic for Advanced Salesmanship," designed to help dealers teach their salesmen improved selling and promotion techniques. Comments and suggestions from dealers and their personnel will be welcomed by the author. Address correspondence to Robert G. Mihan, c/o Editorial Dept., American Artisan, 6 N. Michigan Ave., Chicago.

Future articles will tell how to:

- **Train new salesmen**
- **Merchandise central air conditioning**
- **Present the health story to increase prospective buyers' interest in air conditioning**
- **Take advantage of the assistance available from distributor salesmen**
- **Sell the modernization market**
- **Stress quality components and justify the price of the equipment you sell**
- **Develop and use visual aids to train retail salesmen**
- **Develop and use selling tools to present your equipment to prospects**

speaking the prospect's language when he sincerely describes the constant comfort, good nights' sleep, healthful conditions and cleanliness provided by controlled temperatures the year around.

Now Close the Sale

Once the individual objections have been overcome, the salesman gives his presentation the final test. He asks for the order. Various techniques for closing the sale will be discussed in a later article. One of the best tested techniques, however, is the leading question, "Would you prefer delivery on Wednesday or Thursday of next week"? If the prospect commits himself, the salesman immediately provides pen and order blank. If he isn't ready to sign, the hidden objections will begin to present themselves and the salesman can proceed to overcome them until final satisfaction is expressed and the sale is made.

Use Human Nature

Here are some suggestions for turning three basic human traits into advantages which will induce the prospect to listen to the salesman's presentation:

1) *Self interest* — Stress personal benefits to the prospect.

2) *Curiosity* — Drop some subtle hint that will make him want to hear more about the product.

3) *Courtesy* — Diplomatically place the prospect in a position where he feels it is only fair to listen to the presentation.

In summary, here are three methods salesmen might use to overcome prospects' objections.

1) Ask why. Find out the reasons for the objection, then overcome it.

2) Discuss the objection thoroughly. Dispel it by giving helpful information and counsel. Don't argue, but give the prospect complete and fair answers to all his questions.

3) Use the "Yes, but . . ." technique. Maintain obvious respect for the prospect's viewpoints, opinions and prejudices but help him reach more logical conclusions.

12 COMMON OBSTACLES TO CLOSING THE SALE

1 *"I can't afford it."*

The customer must be convinced he'll save money in the long run with a modern system.

2 *"I have to consult my husband."*

The salesman should arrange a meeting and present his proposition to both husband and wife.

3 *"I'll buy next week."*

The salesman points out that the promised benefits and savings in cost begin at once when a heating-cooling system is installed immediately.

4 *"I never buy on installment basis."*

This objection is often a stall and can be overcome by special arrangements to pay cash on a 30, 60 or 90 day basis without interest charges.

5 *"My old furnace is adequate."*

Comparison of features of the proposed installation with those of the old unit leaves little doubt as to the advisability of replacement.

6 *"The price to too high."*

The salesman emphasizes the importance of quality equipment, and explains what the prospect will get for his money.

7 *"I've never heard of your company."*

The salesman points out the reputation of the manufacturer and his products and presents testimonials from satisfied customers in behalf of his company's work.

8 *"I'm interested in another brand."*

The salesman agrees that the competitive line is good, then proceeds to point out the advantages of his company's equipment.

9 *"The type of fuel used is dangerous."*

The salesman emphasizes the high standards observed by his firm's engineers and points to the safety requirements of the various associations and testing agencies.

10 *"Warm air heating is dirty."*

A description of the filtering processes used in modern systems will dispel this objection.

11 *"The fuel is too expensive."*

Actual operating costs are cited and the most inexpensive fuel is recommended.

12 *"I always feel cool in a warm air heated home."*

The functions and reliability of modern controls should be emphasized and the advantages of continuous changing of air cited.

THIRD IN A SERIES

Mobile Lab Heating Problems In

On-the-spot tests show that more attention installation would have eliminated many of

THE GROWING trend among America's home owners seems to be toward three-and four-bedroom houses with interior and exterior features that make the house distinctive and different in appearance from other houses in the same neighborhood. Architects find split-level houses provide the most economical answer to this popular leaning.

Split-level houses usually present the air conditioning engineer with difficult layout problems. The various levels make it easy to overheat or overcool certain parts of the house and difficult to heat or cool other parts. There is also the problem of draft caused by air flowing from one level to another. These problems are characteristic of all forms of heating, with the air distribution system being best adapted to split-level heating and cooling because it is possible to control much of the air flow between levels.

To obtain detailed information about the performance of air distribution systems used for split-level houses, the National Warm Air Heating and Air Conditioning Association during the winter of 1954-55 instructed its mobile laboratory staff to secure five-day records on a number of these houses. The information obtained has been summarized and is presented here by permission of NWAH-ACA with suggestions that would improve comfort and equipment performance.

This is the third of a series of five articles dealing with the subject of heating and cooling the popular split-level houses.

Low Wall Registers Used

This survey was made in a split-level house, in which the bedrooms are located over the recreation room and the living room over an unheated crawl space. The heating system is an extended plenum system supplying warm air to low wall registers located on the exposed walls and near windows.

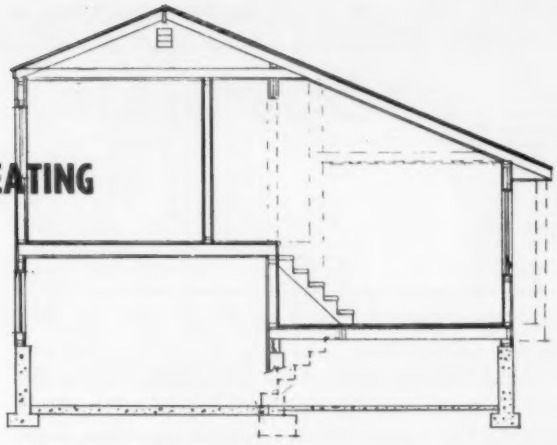
As is the case in similar installations, the mere fact that modern low wall diffusers are located at the exposed walls does not guarantee successful operation. Specifically, a number of operating characteristics are worthy of special mention.

Considerable temperature stratification was obtained in the recreation room. The temperature at the 30 in. level was 5.0 F higher than the temperature of the air near the floor. Also, the ceiling air was almost 10 F higher than that at the 30 in. level. The registers for the recreation room are located near the ceiling.

The house was erected in 1954 at a cost of $11,900 including the land but not a garage. A partial crawl space is located beneath the living room area. Crawl space walls are eight in. poured concrete with a two in. concrete floor. The crawl space floor is located three ft,

OF FIELD REPORTS ON MULTI-LEVEL HEATING

Solves More Split-Level Homes



MOBILE LAB'S test house includes most of the problems faced in heating a split-level home. The three levels include the basement level (left), living room level (right), over the crawl space, and the bedroom level (top left)

given to the control settings at time of the problems in this low cost frame house

four in. below the bottom of the middle level floor joists. Recreation room and crawl space floors are on the same level and are two feet four in. below the grade level. The crawl space is not ventilated, and there is no evidence that excessive moisture exists.

The wall construction is asbestos shingles applied to a conventional wood frame. One half in. thick insulation is used between the studding and the shingles and two in. insulation batts between the studdings. The inside surfaces of walls and ceiling are dry-wall. Two in. thick insulation batts are used between the ceiling joists. The attic space is vented at the two gable ends of the house by metal louvers, each with 1.5 sq. ft. free area.

All windows of the house are double-hung wood except for fixed wood construction windows in the living room (one), recreation room (one), and half bath. None of the windows are provided with storm sash. The two doors are wood construction. Windows and doors are weather-stripped.

The design temperature is zero F and the degree days average about 5300 for the year. The design heat loss for the living area is 43,240 Btuh and for the lower level (recreation room, laundry, furnace room, and half-bath) it is 18,095 Btuh, for a total of 61,335 Btuh. For the living space area of 988 sq ft the living-area design heat loss amounts to 43.8 Btuh per sq ft of floor area. For the total floor area of 1451 sq ft, the design heat loss is 41.9 Btuh per sq ft, according to measurements taken.

This is an extended plenum duct system, partially in the crawl space. One warm air plenum supplies air to four of the eleven registers, and a second plenum supplies air to seven registers. For the 128 feet of exposed wall length in the upper two levels, six low side wall registers are located at the perimeter of the house, and one low side-wall register on an interior wall of the bathroom. This placement of registers gives a resulting average distance of approximately 16 feet between registers. Three high side wall registers supply the recreation room and half bath on the lower level. The return air system has three return air intakes, one in the hall of the upper level, one at the side of the stairway of the center level and one in the recreation room of the lower level. The static pressure loss of the entire duct system is below 0.20 in. WG when the temperature rise through the furnace is 99 deg.

The furnace is a gas-fired highboy model with an input rating of 100,000 Btuh and output rating of 80,000 Btuh. The blower is a nine in. centrifugal direct driven type using a variable speed ¼ hp motor.

Burner Cycles in Jerks

The control settings are far out of line with CAC (Comfort Air Circulation) principles. Result is that the

TABLE 1—HEAT LOSS and air distribution data is based on design temperature of zero F

Room	Heat loss	Cfm (Calculated)	No. diffusers
Bedroom 1	6188	66	1
Bedroom 2	3355	42	1
Bedroom 3	5242	47	1
Dining room	4700	54	1
Living room	13,637	112	2
Kitchen	7651	51	1
Bath & hall	2467	46	1
Recreation	10,031	83	2
Half bath	3832	44	1
Utility room	4232	0	0
Crawl space	not calculated	0	0
Totals	61,335	545	11

burner cycles in short jerks for a 30 minute period after which it remains inoperative for another 30 minute period. Apparently the limit switch is shutting off the burner. The bonnet air and register air temperatures vary widely and the room air temperature variations are almost 6.5 F during a burner cycle. Furthermore, the indications are that 100 percent blower operation would not occur until outdoor temperature was near 15 F.

The maximum air temperature recorded at the 30 in. level in the rooms on the center and upper levels was 74.0 deg (living room) and the minimum was 70.5 deg (kitchen) with an average at the 30 in. level for the center and upper level rooms of 71.9 deg. The air at the 30 in. level in the recreation room on the lower level was 63.4 deg or about 8.5 deg cooler than the average for the upper and center level rooms.

The floor surface temperatures and the room air temperature differences clearly reflect the air temperatures beneath the floor. Bedroom 3 is directly over the furnace and the connecting duct system. It has the highest floor surface temperature and slightly higher air temperatures. The living room-kitchen area is over the partially heated crawl space and has the lowest floor surface temperatures of any area on the center or upper levels. (The crawl space temperature is below 50 F.)

The arrangement of the bedroom hallway is such that the hall and living room are separated only by an ornamental grille between the stairway and the entrance to Bedroom 1. The upper level return air intake is so placed that it takes care of all the return air from Bedroom 3 and the bathroom, and all or part of that from Bedroom 2. All of the return air from Bedroom 1 drops over the edge of the hall floor into the living room and enters the return air intake in the living room at the stair wall. There is noticeable air movement at this point, and it might well have an influence upon the living room air temperature 3 in. above the floor level.

The average temperature difference of 5.1 deg from floor to ceiling of the center and upper level rooms at 34 F weather is equivalent to 1.46 deg for each change of 10 deg in indoor-outdoor temperature difference. Similarly, the temperature differential from the floor to the 30 in. level is equal to 0.93 deg for each 10 deg change. These values are relatively large. Those in the recreation room are much larger. The floor to ceiling temperature difference of 14.9 deg is equal to 4.03 deg for each 10 deg change in outdoor temperature.

Large Air Temperature Drop in Ducts

The highest register air temperatures observed were at the three basement outlets (over 132 F), and the lowest were at the distant outlets at the living room. The temperature drop of the air in the ducts was large, another indication that fan switch settings are not in accordance with CAC principles.

The range of register air temperatures from maximum to minimum during a burner cycle is large, averaging 58 F. Such large variations in register air temperature during a burner cycle are not conducive to good room air temperature control.

The total calculated air flow rate for registers is 550 cfm. The calculated air flow rate based on the return air velocities is 618 cfm. The calculated air flow rate based upon the furnace heat balance is 545 cfm. The value of 545 cfm determined from the furnace heat balance calculations is assumed to be most nearly representative of the true air flow rate because of the accuracy possible when the exact fuel input to the burner can be measured.

The static pressure on the warm air side of the system is low, amounting to only 0.055 in. of water for an air flow rate corresponding to a temperature rise through the furnace of 99 F. The static pressure loss on the return air side is 0.10 in., making a total of 0.155 in. The evidence indicates that the duct design is conservative and that the duct sizes are ample.

The typical records of temperatures during a burner cycle are most revealing. The peaks and valleys in the warm air plenum temperatures show that the burner operates in short pulsating jerks, probably because the limit switch shuts off the burner when the bonnet air temperature exceeds 145 F.

Find Large Flue Gas Losses

The flue gas losses are appreciable, amounting to 31 percent, primarily because of the low CO_2 content of the flue gases. The resulting calculated bonnet capacity is extremely low, and less than three-fourths of the rated capacity. The calculated air flow rate from the furnace heat balance is, however, in excellent agreement with flow rates determined at the registers and return intakes.

Extrapolation of burner operating times to colder weather conditions indicates that 100 percent burner operation would be obtained at an outdoor temperature of about 15 F., which would leave no reserve capacity to handle the zero F design weather load.

All the evidence shows that a material change in control settings is desirable. First of all the fan switch settings should be lower than 115 F, since the blower is not cutting in early enough. The limit switch setting should be increased, to prevent the frequent intermittent operations of the burner. Finally, a closer adjustment of the room thermostat differential might be helpful. The room air temperature variations of almost 6.5 F during a burner cycle are far from ideal. This system can be accused of providing "cold 70" operation.

AIR CONDITIONING HANDBOOK

How to Solve Engineering and Installation Problems

When Low Pressure Cutout Causes Short Cycling...

...here are the potential danger points that should be checked out, once the thermostat and oversizing of unit have been eliminated as causes for stopping the compressor. Important to remember is that the low pressure cutout is a safety device and its tripping must be considered a cause for immediate action

By S. W. Reid

Air Conditioning Engineer
Gilbert Associate, Inc.

SUMMER AIR CONDITIONER operation which is characterized by a succession of relatively short on and off periods was defined in last month's article as short cycling. It was shown that such operation is initiated by some abnormal condition which causes the thermostat, the low pressure cutout, the high pressure cutout or the compressor overload device to trip. If the contacts reclose automatically while the unit is out of operation and if the abnormal initiating condition persists, each successive running period will be cut short by another tripping of the control switch.

Three of the four devices mentioned above which can stop the compressor are used only for safety and protection. Consequently, when one of these devices trips, the serviceman is automatically warned that an abnormal condition has occurred, and he should make every effort to find it. Too often such tripouts are attributed to some undefined "temporary condition," especially if a superficial check has not revealed the trouble. A repeat of the tripout should mean detection and correction of the trouble are imperative. Any attempt to prevent nuisance tripouts by deliberately wiring around or improperly adjusting a protective device is no more of a solution to a trouble spot than is the practice of inserting pennies in place of burned out fuses.

Which Device Has Tripped?

Abnormalities which initiate a protective device tripout are summarized in Table 1. The serviceman must first find which device is tripping and then find and correct the condition which causes the trip. The former is largely a matter of observation if the controls are of the automatic resetting type. If any or all of them are of the type which require

TABLE I – What to Look for When Short Cycling Occurs

When thermostat trips —

a) Improperly set differential
b) Oversized cooling unit

When low pressure cutout trips —

a) Tripout pressure set too high
b) Insufficient air over coil
c) High superheat adjustment of expansion valve
d) Shortage of refrigerant
e) Restriction in liquid or suction line
f) Oil accumulation in evaporator

When high pressure cutout trips —

a) Trip out pressure set too low
b) Insufficient condenser water or air
c) Condenser dirty
d) Overcharge of refrigerant
e) Restriction in discharge line
f) Air in condenser

When overload protector trips —

a) Incorrect overload device
b) Faulty overload device
c) Low voltage
d) High head pressure
e) High return air temperature
f) High protector ambient temperature
g) Low suction pressure (hermetics)
h) Starting relay doesn't open (hermetics)

resetting by pushing a button, the unit will not short cycle but will remain shut down. In this case, the serviceman usually can locate the device which has tripped without too much trouble.

The thermostat is undoubtedly the least likely of the four control devices to be a factor in short cycling. For this reason, it would not normally be investigated until all the more common possibilities had been explored and eliminated. When it is checked, the proper procedure is as follows:

1) Set the themostat high so the cooling unit does not operate.

2) Hang a reliable thermometer near the thermostat.

3) Allow sufficient time for the thermometer to come into equilibrium with the room temperature.

4) Adjust the thermostat slowly downward until the cooling unit starts and record the temperature.

5) Record the temperature again when the cooling unit stops.

The difference between the two temperature readings is the thermostat differential. It should be between 2 and 3 F. On certain types of thermostats the differential can be adjusted. If this is not possible, the best policy is to replace rather than tamper with an instrument which does not function as it should.

Cases in which the cooling unit is so oversized as to result in a short running period are rare but not unheard of. Such operation will be particularly noticeable when the load is relatively light as on a cloudy day or in the evening. The condition may sometimes be created artificially should the owner close off ducts feeding certain spaces which were figured into the original load. A review of the load calculation may clear up any suspicions about the size of the unit as compared with load. Not much can be done to correct an application where the unit is too large. Oversizing is more easily avoided than corrected. Reducing air quantity sometimes helps, but there is a limit to what can be done in this direction because of the danger of coil frosting.

Check Six Trouble Spots

When the low pressure cutout is found to be a factor in short cycling, the serviceman has at least six causes to search for as shown in Table 1.

First, if connections are available, he will put his gages on the suction and discharge sides of the compressor. These gages will be useful not only for checking the operating pressures after a reasonable running period but also for making sure the cutout trip pressure is properly set. To check the latter, the serviceman removes the conditioned air fan belt so no air passes through the cooling coil. Then he starts the compressor and carefully watches the suction pressure as it drops to the point where the low pressure control trips. If the trip pressure is not correct, he adjusts the control setting and repeats the test until proper adjustment is made. Many automatic reset controls have a differential adjustment which must also be checked. This is done by noting at what pressure the compressor restarts after a tripout.

Having ascertained that the low pressure cutout is properly set, the serviceman replaces the fan belt so the unit can run normally. He observes the operating pressures. If the unit has just started to circulate air through a warm space, he waits an hour or so before reading the gages — at least until the pressures have stabilized. Since we have assumed the serviceman is investigating a complaint of low pressure tripout, we shall also assume that the suction gage shows a pressure which drops gradually until the control trips.

Are Filters Clogged?

One of the most common causes for the low pressure tripout — and

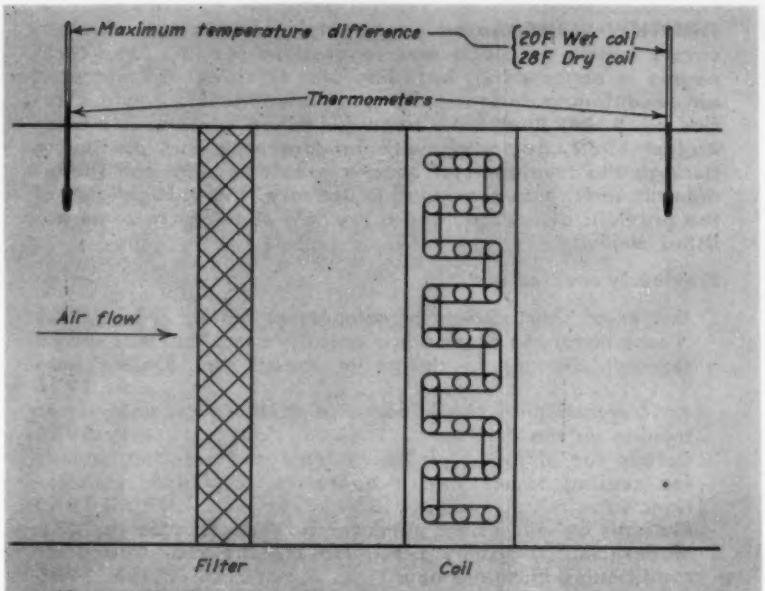
resulting short cycling if the control resets automatically — is insufficient air flowing through the cooling coil because of clogged filters. Owners of cooling units seem to have in common a lack of understanding of the importance of filter maintenance. This writer was once asked in all seriousness, "How often must the air conditioner be defrosted"? The owner had noticed that the unit was not cooling properly and had seen ice and frost over a good portion of his coil. It was not hard in this case to demonstrate first hand what the very dirty filter had done to the operation of the unit.

While the clogged filter may be the most common reason why air flow through a coil is reduced, it is not the only reason. As a further check in this direction, the serviceman places thermometers in the paths of the air entering and leaving the unit. If the difference in these readings is much more than 20 F when the coil is wet (dehumidification is taking place) or 28 F when it is dry, he has a clue that the air flow is less than it should be and will check for improperly set dampers or other air system restrictions or perhaps for improper blower speed.

Trace Refrigerant Circuit

Failing to find anything wrong with the air circuit, the serviceman might seek next an explanation for the low pressure in the refrigerant circuit itself. Table 1 shows four possibilities. First he would make sure all valves intended to be open were so positioned and that the condenser cooling water or air was being circulated at the proper temperature and quantity.

The serviceman might start his investigation of the system by checking the superheat adjustment of the expansion valve. Vapor in the suction line at the coil is usually maintained at a temperature between 5 and 10 deg above the temperature corresponding to the suction pressure. One function of a thermostatic expansion valve is to maintain this amount of superheat at the coil to assure that only dry vapor and no liquid will reach the compressor. A high superheat temperature is an indication that the valve is not feeding enough liquid refrigerant into the coil. Lack of refrigerant reduces coil capacity and causes a coil-compressor balance at a lower-than-normal suction pressure.



ADEQUATE AIR FLOW over cooling coil will result in a maximum temperature difference between intake and outlet air of 20 F for wet coils or 28 F for dry coils

Is Coil 'Starved'?

When the serviceman encounters a low pressure, high superheat condition, he describes the coil as being starved. To make corrections, he will first try to lower the valve superheat setting (most valves are provided with an external means for doing this). If no improvement in pressure is noted, he may even remove the valve bulb and warm it in his hand. If the valve is working properly this will cause it to open wide so it can pass a maximum of refrigerant. If a proper pressure increase does not result, the serviceman will check the possibility that some of the refrigerant has leaked from the system. A halide torch will detect the source of any escaping gas so the leak may be stopped before refrigerant is added.

The high pressure gage on the compressor discharge line is useful in determining when sufficient refrigerant has been added. The usual procedure is to attach the supply drum to the suction line and allow the compressor to pull in vapor slowly. (Connection is made to the top of the drum so liquid cannot enter the charging line.) The discharge gage is watched carefully. When it shows a rise above the normal operating pressure, the system will be charged with all the refrigerant it can properly take.

Sight Glass Tells Story

Some systems are supplied with a sight glass in the liquid line between the condenser and expansion valve. This gives the serviceman an immediate indication as to whether or not the charge is proper. If the glass is clear during operation, no charge need be added. If it is milky, the liquid line contains bubbles of vapor as well as liquid — an indication of refrigerant shortage.

The preceeding discussion applies to systems with thermostatic expansion valves. If the refrigerant is metered by a capillary tube, the amount of charge is much more critical. The usual requirement is that the system be evacuated and then recharged with a new quantity of refrigerant of the exact weight recommended by the manufacturer of the equipment.

THIS NEW SERIES, based on actual interviews with dealers, covers known problems and suggestions for improved techniques in engineering, installing and servicing of residential air conditioning systems and their components. Previous series by S. W. Reid have been published continuously since August 1952, beginning with fundamentals and continuing through the treatment of specific problems since the fundamentals series was concluded in January, 1954. Highlights of the previous discussions and a preview of things to come are listed below:

Previously covered are . . .

Causes of short cycling of compressor motor . . July 1956
A case history in which a low capacity complaint was solved through changes in design to reduce the cooling load . . . . . June 1956
An illustration of the importance of thorough analysis of trouble on the first call . . . . . May 1956
Details for planning piping systems and selecting pumps for cooling tower and evaporative condenser installations . . . . . April 1956
Methods by which heat gains can be reduced . March 1956
Modernizing a gravity system to provide year 'round air conditioning in an old house . . . . . Feb. 1956
Controlling humidity regain with cooling coil bypass when the condensing unit is off . . . . . Jan. 1956
Sizing refrigerant lines for remote installations . Dec. 1956
Determining if the blower used for an existing warm air heating system is large enough for summer cooling . . . . . Nov. 1955
Eight combinations for arranging heating and cooling equipment, the advantages and disadvantages of each . . . . . Oct. 1955
Review of air flow patterns for cooling applications with recommendations for selecting and locating registers . . . . . Sept. 1955

On the fire are . . .

Problems involved in converting water cooled equipment to air cooled equipment
Effect of introducing outside air into a residential air conditioning system
Effect of oversizing and undersizing cooling equipment
Important factors to weigh when installing evaporators

Considering once again the system with an expansion valve, let us assume that the serviceman found the refrigerant charge correct. Since warming the expansion valve bulb made no improvement in suction pressure, he would look further for a reason for the high coil superheat. A defective valve might be the answer. The valve could not open properly if the power assembly had lost some of its charge. Another possibility would be an accumulation of dirt in the valve seat or in the liquid line strainer or a partially closed liquid line stop valve.

Restrictions in the liquid line can be detected by touch as any reduction in pressure will be accompanied by a reduction in temperature. The liquid line should always feel warm right up to the expansion valve. If the system charge is correct, a defective expansion valve is indicated when warming the bulb results in little change in suction pressure.

Does Evaporator Contain Oil?

Oil accumulation in the evaporator is not common as a cause of low pressure in a factory-built system. Oil is a necessary component of every mechanical cooling system that has a compressor with moving parts to be lubricated. Normally some oil circulates with the refrigerant through the system, but in a well designed compressor the amount does not exceed 1 to 2 percent of the refrigerant, and almost never does it exceed 10 percent.

When a cooling system is designed, some assurance must be given that oil will not separate from the refrigerant and fail to return to the compressor where it is needed. The main problem is encountered in evaporator and suction line design. It is largely solved by keeping the refrigerant velocity above 500 fpm in horizontal runs and 1000 fpm in vertical runs. Actually, usual design velocities range between 1000 and 2000 fpm. Evaporators which have the liquid feed at the top and the suction connection at the bottom provide some advantage in return of oil as oil released by the boiling liquid is carried to the bottom where it is swept out by the high velocity vapor.

Track Down Oil Loss

Any accumulation of oil in the evaporator will, of course, reduce the surface available for boiling of refrigerant. This, in turn, results in a coil-compressor balance at a lower pressure. The serviceman should never add oil to a system without making every effort to determine what happened to the oil that appears to be missing from the crankcase. Oil in a compressor does not burn up and disappear the way it does in an automobile engine. If the level is low, the oil has either leaked out (in which case there should be some visual evidence of it) or it has accumulated in the refrigerant system. If the latter is the case, it can sometimes be brought back by warming the expansion valve bulb to cause the valve to open wide and allow as much refrigerant as possible to pass through the coil. When this is done, care must be taken to guard against liquid reaching the compressor. Repeated oil accumulation in an evaporator should be treated as a design problem and velocities should be checked as indicated above.

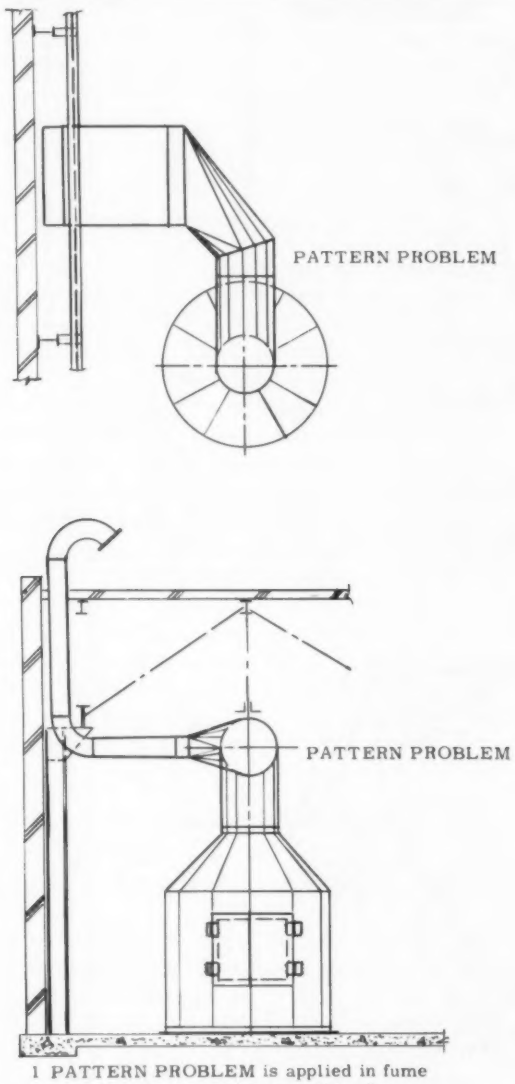
In the September issue, the high pressure cutout and compressor overload device will be covered.

HUGH REID'S SHEET METAL PATTERN

Developing a Pattern for

Rectangular to Round Takeoff

Here are three steps which will help avoid the common error of failing to measure the spacing for the cylindrical end of the transformer at the mitered end



1 PATTERN PROBLEM is applied in fume removal system in which transition from cylindrical to rectangular duct is required. Plan view (top) and elevation view show application in which duct work from enclosed tank to roof exhaust must bypass obstruction

THE PATTERN PROBLEM for this month is a 90 degree end takeoff with an elbow collar.

The most common error in the development for a fitting of this type is failure to recognize that the spacing for the cylindrical end of the transformer section must be measured on the mitered end of the collar pattern as indicated at FF (Fig 4).

It is, therefore, necessary to:

(a) Draw the combination front and half end views, locate the tangent point, establish the working lines and properly identify them.

(b) From the front and end views, develop the collar pattern.

(c) From the front and end views and the collar pattern, the true length lines and the correct spacing for the transformer section are developed.

Each line is developed on a separate triangle. This is for the purpose of clarity in presentation, should the pattern be used for a study group in sheet metal pattern layout apprenticeship or journeyman training. The development of each line is very helpful in understanding and checking the problem. All lines can be developed on a common triangle.

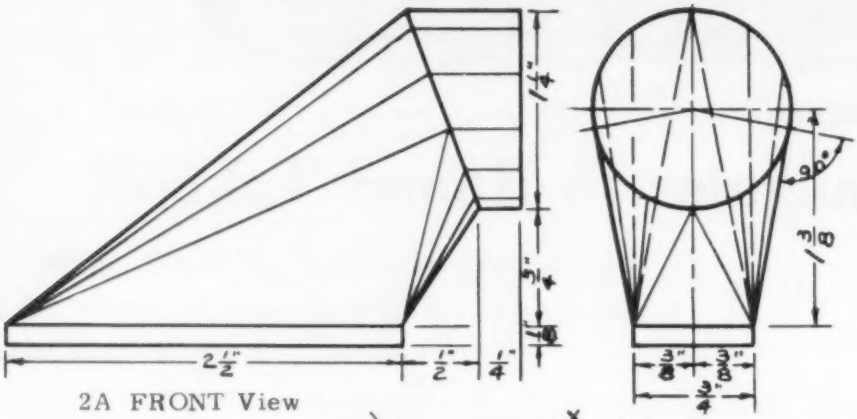
The following is a step by step analysis of the pattern layout procedure:

Simplified Method Drawing, Fig. 3—

(a) Draw the 2½ in. horizontal line AB. Extend the line to the right. From point B measure ¾ in. and mark point O. Draw line from point O perpendicular to AB.

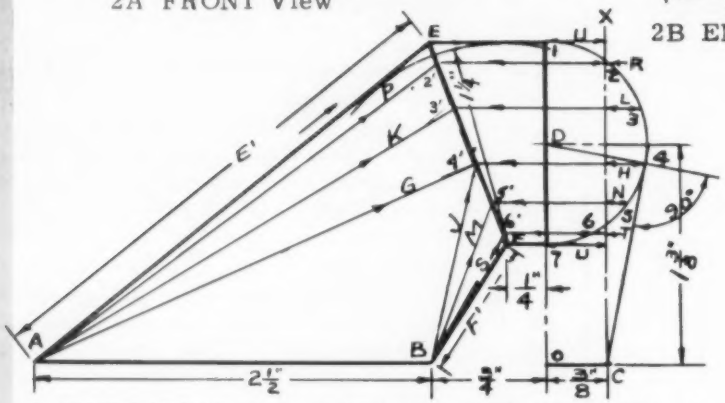
(b) From point O measure up 1⅜ in. (Fig 2B) and establish point D. With D as center and radius ⅝ in., draw a half circle to the right to intersect the perpendicular line. Mark these intersections points 1 and 7.

(c) From point O measure to the right a distance equal to one half the given width of the rectangular base which is ⅜ in. Mark the point C. From point C draw a line tangent to the 1¼ in. diameter half circle. Draw a line from radius point D at 90 deg to the tangent line (Fig 2B), mark the intersection point as figure 4.

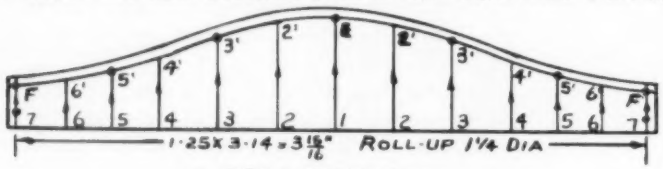


2A FRONT View

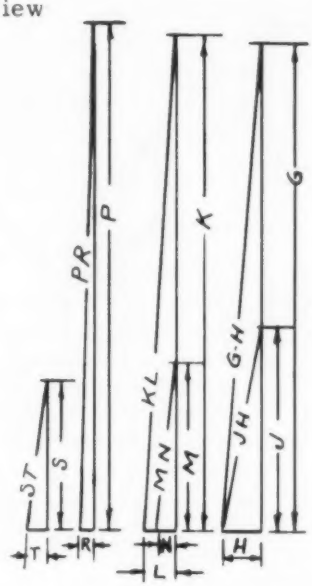
2B END View

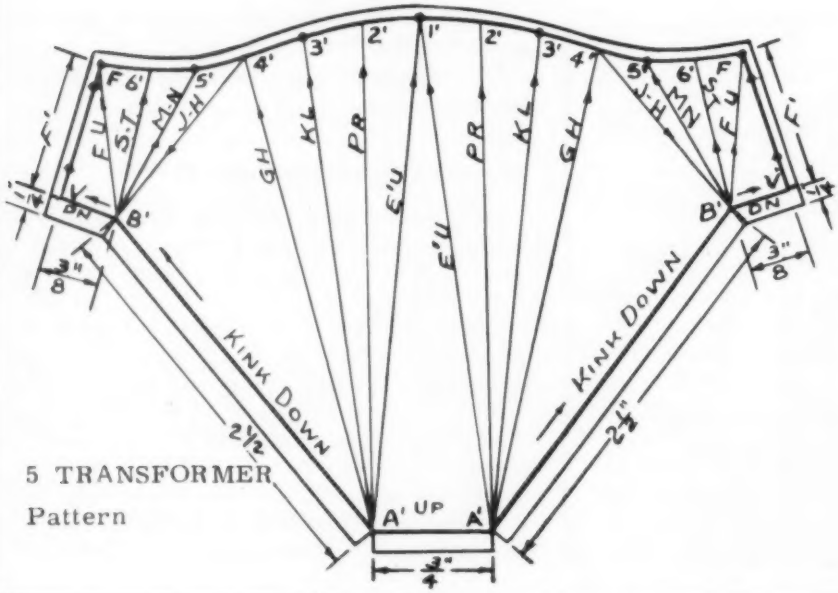


3 SIMPLIFIED Method (Front and Half End Views)

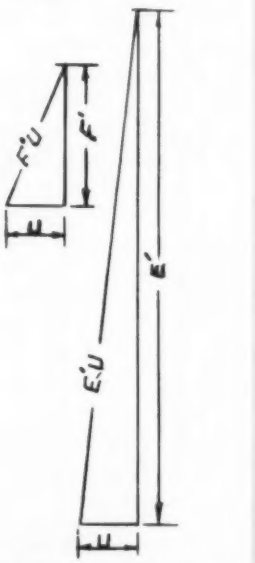


4 COLLAR Pattern





5 TRANSFORMER Pattern



TRUE Length Lines

(d) Divide arc 1-4 into three equal spaces and mark the points 3 and 4. Divide the arc 4-7 into three equal spaces and mark the points 5 and 6. From point 7 draw a line to the left and perpendicular to diameter line 1-7, measure the given length ¼ in. (Fig 2A), and mark the point F. From F draw a line to B, mark this distance as F. With F as center and radius equal to the given 1¼ in. diameter (Fig 2A), draw an arc to the left of point 1. From points A and 1 draw lines tangent to the arc to intersect at point E. Draw the line EF. Also, draw line EA and mark the distance E′.

(e) Draw lines through points 2, 3, 4, 5, 6, perpendicular to line 1-7 and intersecting line EF at points 2′, 3′, 4′, 5′, 6′. From A draw lines to points 2′, 3′, 4′, and mark the lines P, K, G. From point B draw lines to points 6′, 5′, 4′, and mark the lines S, M and J.

(f) From point C draw a vertical line perpendicular to line OC. Mark this line CX. Mark the distances from point 1 to line CX with the letter U; from point 2 to line CX with the letter R; from CX to point 3 with the letter L; from CX to point 4 mark with letter H; from CX to point 5 mark with letter N; from CX to point 6 with the letter T and from CX to point 7 with the letter U.

To Lay Out The Elbow Collar Pattern, Fig. 4—

(a) Calculate the collar circumference by multiplying the given diameter 1¼ in. by the constant 3.14, which is equal to 3 15/16 in.

(b) Draw the 3 15/16 in. horizontal circumference line 7-7. Establish the center point 1 and through this point draw a line perpendicular to line 7-7. From the half circle (Fig. 3) transfer the spacing 1 to 7 to line 7-7 (Fig. 4) and on both sides of the center point 1. Mark both sets of points as 1, 2, 3, 4, 5, 6, 7. Through the points draw lines perpendicular to line 7-7.

(c) Measure line 7F (Fig. 3) and with both points 7 (Fig. 4) as center, draw an arc on the perpendicular line and mark the points F.

(d) Working from Fig. 3, transfer the line lengths from diameter line 1-7 to points 2′, 3′, 4′, 5′, 6′ on miter line EF to the corresponding lines on the collar pattern (Fig. 4) and mark the points E, 2′, 3′, 4′, 5′, 6′. Through the developed points, draw the pattern outline.

To Develop Transformer Pattern, Fig. 5—

(a) Draw a horizontal line equal in length to the ¾ in. width line as shown on Fig. 2B and mark the points A′ A′.

(b) Draw a right angle. Transfer line E′ (Fig. 3) to the vertical leg, and the distance from line CX to point 1 on the half circle marked U (Fig. 3) to the horizontal leg. The hypotenuse line E′ U is the developed line. With points A′ (Fig. 5) as centers and line E′ U as the radius, draw intersecting arcs and mark this point with the figure 1′.

(c) Transfer line P (Fig. 3) to the vertical leg of a right angle, and the distance from point 2 on the half circle to line CX marked R to the horizontal leg. The hypotenuse line PR is the developed line. With points A′ (Fig. 5) as centers, and radius PR, draw arcs to the right and left of points 1′. With a compass measure arc length E2′ (Fig. 4) and with point 1′ (Fig. 5) as center, cut the arcs PR, and mark the points 2′.

(d) The line K is transferred from Fig. 3 to the vertical leg of a right angle, and distance L to the horizontal leg. The hypotenuse line KL is the developed line. With points A′ (Fig. 5) as centers, and radius KL, draw arcs to the right and left of point 2′. Measure chord length 2′-3′ (Fig. 4) and with points 2′ (Fig. 5) as centers, cut the arcs KL and mark the points 3′.

(e) Transfer line G and fall distance H to the vertical and horizontal legs of a right angle. The hypotenuse GH is the developed line. With points A′ (Fig. 5) as centers and radius GH draw arcs to the right and left of points 3′. With arc length 3′-4′ (Fig. 4) as radius, and points 3′ (Fig. 5) as centers, cut the arcs GH and mark the points 4′.

(f) From Fig. 3 transfer line J to the vertical leg of a right angle and fall distance H to the horizontal leg. The hypotenuse line JH is the developed length. With points 4′ (Fig. 5) as centers, and radius JH, draw arcs to the right and left of points A′ A′. With the 2½ in. line AB (Fig.3) as radius, and points A′ as centers, cut the arcs JH and mark the points B′.

(g) Transfer line M and fall distance N (Fig. 3) to the vertical and horizontal legs of a right angle. The hypotenuse line MN is the developed length. With points B′ (Fig. 5) as centers, and radius MH, draw arcs to the right and left of points 4′. With a compass measure arc 4′-5′ (Fig. 4) and with point 4′ (Fig. 5) as centers, cut the arcs MH and mark the points 5′.

(h) Line S and the fall distance T (Fig. 3) are transferred to the vertical and horizontal legs of a right angle. The hypotenuse ST is the developed length. With points B′ (Fig. 5) as centers, and radius ST, draw arcs to the right and left of points 5′. Measure arc 5′-6′ (Fig. 4) and with points 5′ as centers, cut the arcs ST and mark the points 6′.

(j) Transfer line F′ and fall distance U (Fig. 3) to the vertical and horizontal legs of a right angle. The hypotenuse line FU is the developed line. With points B′ (Fig. 5) as centers, and radius FU, draw arcs to the right of points 6′. Measure arc length 6′ F (Fig. 4) and with points 6′ (Fig. 5) as centers, cut the arcs FU and mark the points F.

(k) Measure line F′ (Fig. 3) and with points F (Fig. 5) as centers, draw arcs to the right and left of points B′. Measure line ⅜ in. (Fig. 3) and with points B′ (Fig. 5) as centers, cut the arcs F′ and mark the points V.

(l) Through the developed points, draw the pattern outline. From lines V B′, B′ A′, A′ A′, measure down the given ⅛ in. flange length as shown on the front view drawing (Fig. 2A,) and draw lines parallel to and equal in length to these lines.

Add allowances for seams and joints, lay out the rivet holes, and mark the patterns for fabrication.

This is another in a regularly-scheduled group of articles appearing in American Artisan under the general heading " 'TRAINING PROGRAM'. . IN PRINT." These articles are especially prepared to help dealers in developing know-how in all phases of their organizations. Previous articles discussed:

1. Electrical problems as they affect the dealer's air conditioning installations.

2. Humidity control using a heat pump.

3. Various techniques for better management.

4. Methods of air distribution for modern homes.

5. Installing cooling in a wet heat house.

6. Effective presentations for selling architects on warm air heating for school buildings.

7. Value of early promotion of cooling equipment.

This month we turn to a discussion of the versatility of zone control in various types of year 'round systems.

Zone Control Is A Selling Tool

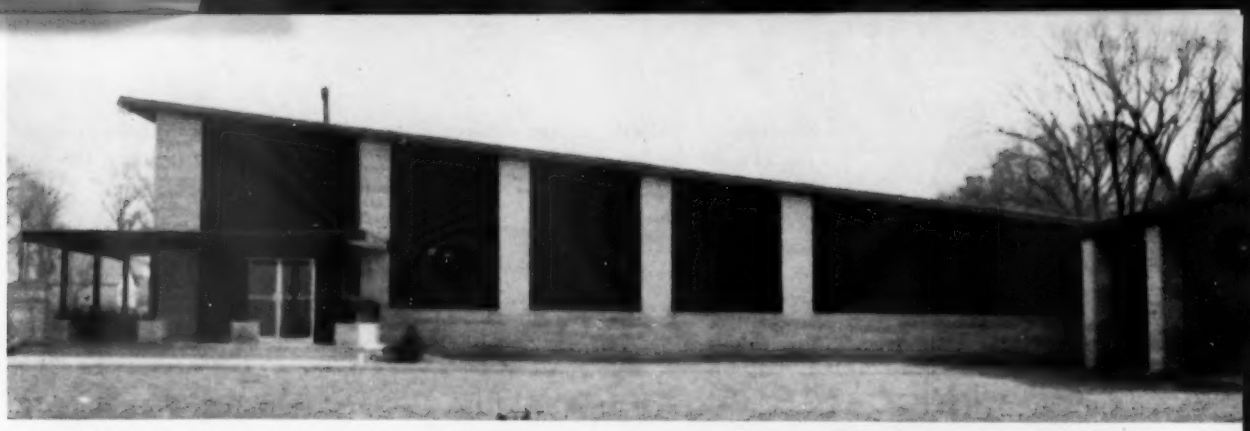
. . . for a heating dealer who uses multi-colored layout proposals, complete analysis of each job and an enviable reputation for satisfaction to convince his prospects that zone control solves the variables in heating requirements

ENGINEERING consultation pays off in best possible presentation for a bid and utmost satisfaction for prospects. James C. Hoggart (left) and T. B. Speaker check details of year 'round air conditioning system

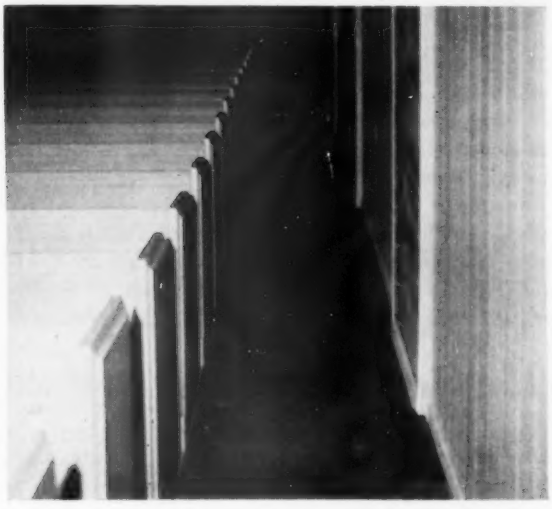
IT IS THE BELIEF of T. B. Speaker, heating, cooling and ventilating contractor of West Lafayette, Ind., that few warm air heating problems are exactly duplicated. Mr. Speaker's experience has been extensive in all types of installations. He finds that methods used to solve one heating problem can be applied in part to solving problems arising in buildings of similar construction and shape. But exposure, special requirements of customers, and types of fuel used often interfere with the heating comfort obtained. Therefore, systems must be designed individually to meet the specifications of the building; it is Mr. Speaker's opinion that the best method available to the engineer today is some form of zone control, preferably a bypass system.

The size of the building has little influence on the amount of attention directed to engineering of the heating or cooling system specified at F. H. Speaker and Sons Co. A tentative layout of each building is made by one of the company's three engineers. Then a conference is called. The building's characteristics and peculiarities are reviewed and alterations that seem advisable are made. On some buildings, where structural problems exist, it is not uncommon for three or four tentative plans to be drawn before the final working drawings are prepared.

This idea is used for residences, commercial and public buildings and is responsible for the enviable reputation the company enjoys within a 75 mile radius of Lafayette. It also is one of the reasons that T. B. Speaker is a committee member of the National Warm Air Heating and Air Conditioning Association college short course committee and chairman of the Indiana Sheet Metal Contractors Association educational commit-



ZONE CONTROL for year 'round air conditioning system was answer by F. H. Speaker and Sons Co. to problems posed by layout of modern Christ Church, which contains balcony, auditorium and wings for study and classrooms



MODERN CHURCH ENTRANCE is flanked by floor diffusers which blanket glass areas beside doors

FLOOR DIFFUSERS in main auditorium of church are located in aisle next to wall, are supplied by trunk ducts under floor

tee, and why he is often called upon to moderate annual convention forums on warm air heating and air conditioning. So it's not surprising that people in the area who want the best in heating and cooling systems — large or small — come to F. H. Speaker and Sons Co. for estimates.

Procedures Based on Past Experience

The procedures Mr. Speaker uses have been developed from experience gained over the years. The company was formed in 1931 and has grown with the warm air heating and air conditioning industry. When a man is hired and trained by the company, he seldom leaves. The last time an employee left was nine years ago.

A description of some of the jobs sold by the company and how they were designed will illustrate a number of ways that the basic warm air heating or cooling system can be improved. One house, a 78 × 84 ft., three-bedroom, ranch style building built for a doctor is heated and cooled by a four zone air distribution system. The space best suited for the conditioning equipment is at one end of the basement. The final drawing showed all four zones in different colors with the duct work supplying each zone shown in the same color assigned to that zone. The common return duct system was also assigned a color.

Trunks Have Individual Temperature Control

Each zone in the layout had its own trunk line starting from the equipment plenum chamber, and the air temperature to each trunk line would be individually controlled by its own damper motor and thermostat assembly. In one part of the basement two of the trunk lines paralleled each other for 62 ft. Branch takeoffs from each supply trunk extended to diffusers located at the perimeter of the building. There were 29 points where conditioned air would be supplied the eight room, two bath house. There were twelve return openings shown, correctly sized to return an air volume equal to that being supplied by the three trunk lines. In addition to the twelve return openings, a 10 × 8 in. duct run was specified to a 12 × 12 in. louvered opening in the outside wall for admitting an adjustable volume of makeup air.

When the prospect saw this well-engineered and easy-to-read drawing, he looked no further for an air conditioning dealer; he accepted the proposal that accompanied the drawing.

Structural Limitations Met By Zoning

A similar drawing was made for another recent prospect. The 60 × 40 ft house has seven rooms with two baths.

Structural features (location of the fireplace and chimney) required that the furnace and cooling unit be located near the center of the basement in the layout. A four zone air distribution system, each with its own trunk line, was specified for this installation. Each supply duct was controlled by a modulating damper, motor and thermostat assembly. There were 28 supply openings and seven return openings shown.

Each trunk line on this drawing was shown in a different color. The number of runs per zone was easy to identify and showed vividly the coverage given each room for supplying conditioned air to the exposed areas.

Church Job Also Calls for Zone Control

The zoned air distribution system is not limited to residences. The Speaker company has engineered a number of other buildings where zone control is used in one form or another. Recently a new church was erected with all the latest design principles incorporated in its appearance, lighting, sound conditioning and utilization of floor space. To maintain the modern trend, a warm air heating and summer air conditioning system was recommended, and the strongest selling point was zone control.

The floor plan showed a main auditorium with a seating capacity of 300 and a balcony with a capacity of 100 more. The balcony is located over the rest rooms and a sound proof nursery. Sunday School classrooms and the minister's study, along with two other rest rooms, are located behind the pulpit and in a wing to the right of the main auditorium. Perimeter heating was specified for all areas of the building, including the balcony, which used four diffusers for supply air, two along the back wall and one each along the two side walls.

The diffusers used in the main auditorium and the balcony are located next to the wall and in each outside aisle, and supplied by separate trunk systems buried under the floor. The nursery, rest rooms and balcony are supplied from a trunk line beneath the center aisle. The riser from the duct was brought up behind one of the rest rooms in the back of the church auditorium. Each of these two systems is under independent zone control.

The Sunday School classroom wing is also on a separate zone which feeds the perimeter floor diffusers from another supply duct buried under the floor.

Corridor Handles Return Air

All return air feeds into a corridor running the length of the wing and across the rear of the pulpit. The return air from the main auditorium enters the cross corridor through doorways between the two sections of the church.

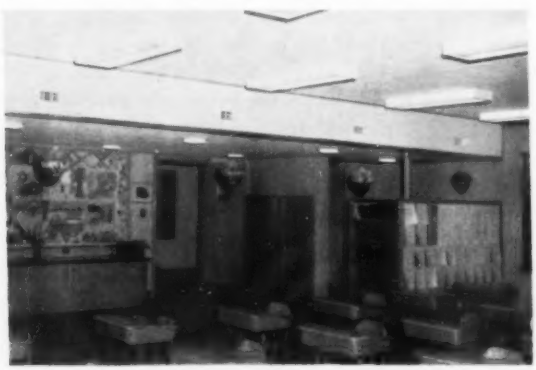
Return air is picked up for reuse from one louvered opening at the end of the cross corridor, where modulating dampers, operated by a motor and automatic control system, adjust the ratio of outside-inside air brought into the return air system.

Zone Control Made to Order for Schools

Another case where zone control has proved best is in schools. The heating needs of students vary with their age, size of class, type of activity and room exposure to weather. In a system designed for an elementary school, Mr. Speaker specified a furnace to serve two rooms, each an individual zone. The supply air is provided through ducts buried in the floor and delivering warm air to the outside wall. Return air is picked up near the ceiling at the inside wall and brought back to the furnace mixing plenum through a duct system designed to eliminate drafts by providing four openings from each classroom for the return air to enter the return duct.

Outside air is added to the return air at a rate that is

INDIVIDUAL ZONES comprised of two rooms each heat new school building. Supply air enters through diffuser at extreme left from ducts buried in floor



DRAFTS ARE ELIMINATED as four openings pick up return air near ceiling at the inside wall of each classroom

COOLING EQUIPMENT and supply duct work for three zones were installed on roof of country club. Supply ducts are covered with metal hoods to protect against the weather. Supply openings drop through roof to ceiling diffusers

automatically adjusted by the temperature of the outside air. The lower the outside air temperature, the smaller the air volume brought in, with the result that more return air is used. Excess return air is expelled from the building through exhaust systems used in conjunction with washrooms.

Cooling Equipment, Ducts Located on Roof

Zoned air distribution systems installed by F. H. Speaker and Co. have proved very successful in air cooling applications also. One recent installation was at the Lafayette Elks Country Club where location of the cooling equipment was a difficult problem. Finally, the equipment was located on the roof and a decorative sign was installed to hide the equipment. Due to building structural features it was not practical to locate the duct work inside the building. The only solution was to run the duct work over the room and cut through the roof deck for each supply opening.

The club was divided into four zones; 1) main dining room; 2) bar; 3) kitchen; 4) private card rooms, rest rooms and office. Supply air is admitted to each room through ceiling diffusers. Return air is collected at a common point in the hall that connects to the main dining room, bar, private rooms and the main entrance. Air supplied to the kitchen zone is exhausted to the outside. All makeup air is brought into the equipment through a louvered opening at the back of the equipment.

CEILING DIFFUSERS are fed from supply ducts on roof (see illustration at top of page) for dining room in fashionable country club

Extra Precautions Called for

Due to the exposed position of the makeup air intake, special precautions were called for to prevent leaves, birds and small insects from entering the equipment at this point. A double duty screen was installed ahead of the filter bank.

The equipment was given a heavy coat of a rubber based protective material and then painted with a commercially available aluminum emulsified roof paint.

The exposed round duct work is suspended about 15 in. above the roof, covered with a layer of jute which itself is covered by a canvas jacket, then a layer of waterproofing material which is painted with a coat of aluminum emulsified roof paint. A 24 ga galvanized hood was built to protect the duct covering and the exposed duct runs from the direct rays of the sun. The galvanized hoods were coated with aluminum emulsified roof paint.

Each zone is controlled by a thermostat that operates a motorized damper motor to adjust the air temperature. The damper motors, also located outdoors, were treated the same as the equipment housing after a metal hood had been installed over all parts except the linkage. The metal hood was treated with the rubber based protective material and painted with aluminum roof paint.

The Speaker company has installed many other zoned air conditioning systems. In some cases they have been sought out to provide solutions to situations where the original equipment installed by other dealers was not performing at the expected level. This equipment is more difficult to rearrange, but with proper engineering, the benefit of consultation, and the firm's broad experience, it is possible to offer some economical solution that will improve an existing system which fails to deliver the comfort a customer has a right to expect.

Many other interesting problems have been solved by T. B. Speaker and his associates for high schools, YWCA's, medical centers, and one-story office buildings.

ONE OF THE first steps in checking controls is to see if the ignition timing adjustment is set for "on" period of 90 to 120 seconds

ADJUSTMENT OF barometric draft regulator is made for 0.02 in. water gage reading on the draft gage

Efficiency Tests Analyze Gas and Oil As Heating Fuels

Research experts consider all the various factors involved to determine the efficiencies of the two fuels and compare costs of each during a heating season

By Ralbern Murray
Assistant Utilization Engineer
American Gas Association

EFFICIENCIES ARE EXCELLENT numbers to use in the comparison of heating equipment. However, caution is in order when placing any value on such a comparison until all the efficiencies are known to have been obtained in a reliable and uniform manner. There are numerous types of efficiencies. It is the thermal efficiency which most significantly affects the economy of a heating system.

When a furnace is tested in a laboratory the amount of heat utilized is usually determined directly. That is, in a warm air furnace the weight of air and its temperature rise are found and evaluated.

This method determines the useful heat obtained (output) which, when divided by the heat input gives the efficiency of the unit tested. Another method of calculating efficiency is to determine the amount of the various losses of heat and obtain the efficiency by measuring the difference between these losses and the input heat value of the fuel used.

The heat losses in domestic oil and gas fired heating equipment that can be measured are:

1) Loss due to the moisture in the air, in the fuel and that formed from the combustion of hydrogen in the fuel.

2) The sensible heat in the dry flue gases.

3) The undeveloped heat in carbon monoxide and hydrogen. There also exists radiation from the furnace which may or may not be considered as a loss depending on whether it is considered as useful heat delivered to the house.

In addition to these losses, there may be additional unaccountable losses, including unburned hydrocarbons and soot which are not ordinarily determinable. Inasmuch as this loss is often an appreciable fraction of the heat input, it is obvious that reliable efficiencies cannot be taken as the difference between the heat input and the readily determined losses.

For this reason comparison of useful heat calculated by estimating and then subtracting flue gas losses from the total heat input repeatedly have been found to be unreliable. Yet, the most common field tests are performed

by servicemen using the equipment available to them. This equipment permits a CO_2 sample test and includes a mercury thermometer to estimate the amount of flue gas loss.

Field Studies Recommended

If reliable comparisons in the economies of different fuels are sought, actual field studies are best since laboratory conditions are seldom obtained at the house site. For the best comparison a sufficiently large number of houses should be studied for a full heating season. Such studies have been made in the field and are cited. The figures obtained and the data used in establishing them can readily be used in getting the true picture of comparative costs. (Editor's note: It must be remembered that natural gas varies in heating value with the section of the country in which the gas is located. No natural gas is 100 percent useable. Some sources of gas contain CO_2, others contain high percentage of hydrogen and others non-combustible gases.)

One of the first of these recent studies was made by A. L. Carroll of the Consolidated Edison Co. of New York and reported to the American Society of Mechanical Engineers in 1952. Fifty six houses were heated by gas-fired equipment and 51 houses using oil were studied. The fuel requirements per 1000 Btu of hourly heat loss were found to be 22.14 therms for gas and 31.5 therms for oil. The relative efficiency was determined by dividing 22.14 into 31.5 to give a value of 1.422, which is the number of oil Btu's required to do a heating job equivalent to 1 gas Btu.

The discussion of Mr. Carroll's results at the ASME meeting showed that he had established confidence in the technical accuracy of his study.

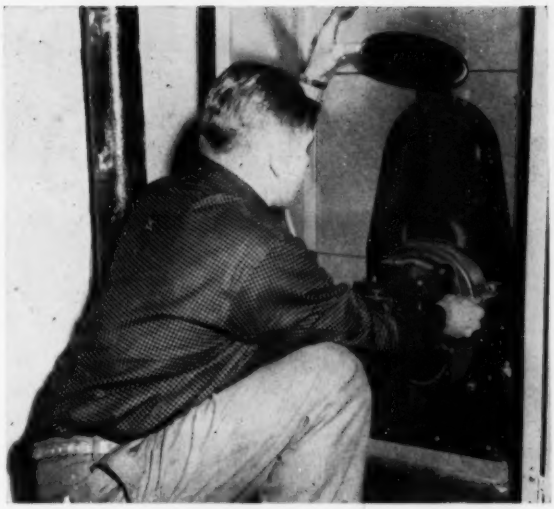
Another independent study was conducted by the Philadelphia Gas Works Co. in 1954, two years later, and yielded similar results. In Philadelphia, for equipment which supplies normal domestic comfort heating, it requires 1.458 Btu of oil to do the job of 1 Btu of gas.

Study 128 Homes in Philadelphia

The Philadelphia study contains information from 128 homes, 64 gas heated and 64 oil heated. All types of regular heating systems were studied, including conversion equipment.

The average results of these two studies show that 1000 gas Btu are equal to 1440 oil Btu, and that 10.3 gal of No. 2 oil are required to do the job of 1000 cu ft of 1000 Btu gas.

Having established consumption ratios, a table of fuel cost equivalents can be worked out. In addition to fuel costs, the home owner who uses oil as a fuel is confronted with one other charge which is not encountered in the operation of a gas-fired furnace. This is the cost of electricity for the operation of the fuel pump and for the spark ignition of the oil, amounting to about $10 annually.



A VISUAL AIR ADJUSTMENT is made at the combustion chamber inspection port

Dr. J. R. Ackerman of the mechanical engineering department at the University of Wisconsin in 1953 tested combustion efficiency vs firing cycle length of domestic oil burners and put his finger on a cause of low efficiency of some oil burners in the field. With the equipment used in his studies, the efficiency of the oil burning unit was only 42 percent during the warmup period. That is until the refractory attained a temperature of 950 F.

This low initial efficiency materially affected the average for a given cycle. Efficiency was determined by comparison of the actual heat recovery with the heat potential of the oil-fired equipment previously described. The tests were made on a pressure atomizing oil burner of the 1 to 3 gph class with an insulating type fire-brick combustion chamber installed in a heating plant with a net rating of 96,000 Btu per hr.

Combustion Is Incomplete During Warmup

Let's take a look at what happens during the warmup period of low efficiency found by Mr. Ackerman. During periods of low efficiency combustion is incomplete and carbon monoxide, hydrogen and soot are the products of poor combustion. In addition, oil droplets which are vaporized over the fire but not burned condense on the cool surface of the heat exchanger and form oil traps for the soot and carbon passing through the heat exchanger at the same time. The result is that the heat exchanger becomes covered with soot. This deposit of soot, until removed permanently, reduces the efficiency of the furnace.

These results shed a considerable light on the reasons for the low efficiency and the relatively high fuel requirements of some oil burning equipment for an entire heating season as compared to laboratory efficiency tests on the same equipment under steady firing.

Here's the Final Report on Air Conditioned Village

INTERVIEWS AND INSTRUMENTS get the facts. Thermocouples are mounted on standards in each room to reflect temperatures at floor, sitting, standing and ceiling levels. The housewife is interviewed by a research worker to obtain information concerning comfort conditions throughout the house

LATEST TESTING EQUIPMENT was used, one of which is the multiple recording instrument for obtaining eight temperatures simultaneously

. . . as it unfolds from findings developed during two years of research under actual living conditions

AFTER TWO YEARS OF research and study, results of the work done on the National Association of Home Builders Research Institute's Austin summer air conditioned village project are available. Each of the 22 homes in the village, which was completed in June, 1954, had a year 'round central air conditioning system. The purpose of the study is to foster the proper installation and use of year 'round air conditioning.

After the houses were occupied a series of technical, medical and psycho-physiological tests were undertaken. Since the houses were occupied by 22 different families, a wide variation in living pattern was obtained. The tests were carried out over a period of one year to cover both the heating and cooling cycles and certain cost data was secured over a two-year period.

Results of the test program included an evaluation of comfort, operating costs, geographical orientation and personal habits of occupants living in air conditioned homes and non-air conditioned homes.

What Is Comfort?

Four of the principal elements producing comfort are air motion, relative humidity, air temperature and mean radiant temperature. Tests were conducted in the village in an effort to determine the relative importance of these elements and the values which are desirable to maintain in each. Table 1 summarizes the findings.

These tests indicate that the mean radiant temperature is a significant comfort factor in residential air conditioning. Insufficient data was obtained to directly relate MRT to comfort except as related to windows and shading. It is apparent from the above data that low mean radiant temperature in itself cannot produce comfort because of the inability of radiant panel cooling to give air motion and to control humidity.

(*Continued on page* 93)

NEVER BEFORE...

A stack switch with ALL the important features!

NEW!.. PENN
OIL BURNER CONTROL

LOOK
AT ALL THESE FEATURES

- Easier to wire . . . *extra* ground terminal.
- Automatic re-cycling with timed purge period.
- Extended time-ignition period.
- Sealed safety and ignition timing mechanisms.
- Protection against low voltage.
- Unusually compact . . . easily adapts to small or large diameter stacks and limited mounting spaces.
- Extra-sturdy, durable enclosure with long-lasting, attractive finish.
- Easily accessible finger-tip control of air adjustment.
- Plus many more that you will appreciate.

Smaller outside . . . roomier inside . . . distinctively styled. Available for continuous ignition, Type 680; or intermittent ignition, Type 682.

GET THE FULL STORY

Contact your nearest Penn Office or write direct to . . .

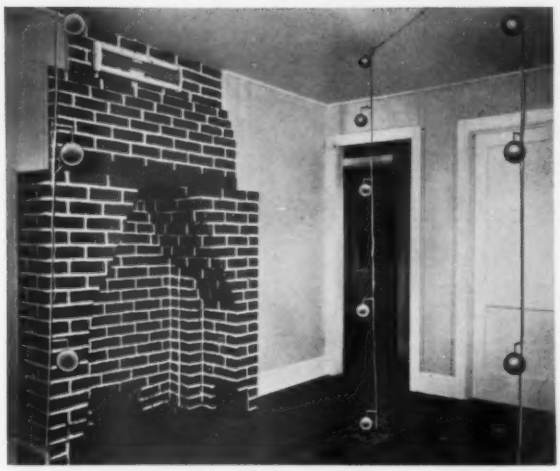
PENN CONTROLS, INC.

Goshen, Indiana

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Tests Uncover Night Temperature Complaints

(*Continued from page* 90)



PART OF THE RESEARCH included taking of air temperature measurements. Here thermocouples enclosed in 3 in. cork spheres are located at different levels throughout one of the houses being tested

Low Night Temperature Opposed

Other comfort findings were: 1) Austin tests were made with outside temperatures of both 105 F and 95 F. No difference in indoor comfort was reported under these two conditions, thus indicating that temperature difference between outside and inside had no bearing on comfort in residential applications. 2) Unanimous objections were raised by mothers of small children to inside night temperatures during summer months of less than 72 F. This was because sleeping children often became chilled when left uncovered. 3) Test observations during summer months in Austin showed that temperature variations less than 4 F between maximum and minimum temperatures measured at the 3 in. and 60 in. levels above the floor throughout the living area were not noticeable to the occupants. 4) The village tests do not clearly show the level of noise acceptable to the occupants. However, a survey made during the second summer of operation revealed that only two of the 22 families reported discomfort because of noise, even though equipment noise in most houses exceeded 40 decibels. The reduction of sound from the outdoors because of closed windows made a significant contribution to indoor comfort.

TABLE 1—COMFORT FINDINGS† show the degree of comfort homeowners felt in respect to relative humidity, temperature and air motion

				Number of families† reporting discomfort
Air motion:	Air in motion	50 percent RH	77 F	0
	Air still	50 percent RH	77 F	18*
Relative humidity: RH	70 RH	Air in motion	77 F	1
	30 RH	Air in motion	77 F	0
	Relative humidity rapidly varying between 30-70 percent	Air in motion	77 F	18**
Air temperature:	Temperature 70 F	Air in motion	50 percent RH	14
	Temperature 75 F	Air in motion	50 percent RH	3
Mean radiant temperature:	Temperature 77 F	Air in motion	50 percent RH	0
	Temperature 80 F	Air in motion	50 percent RH	5
MRT	Temperature 82 F	Air in motion	50 percent RH	18***

*Complaints—stuffy, sweating, damp
**Complaints—stuffy
***complaints—hot
†Tests were conducted on 18 families—other units not occupied during entire test period
(Note: tests were conducted twice, afternoon and before dawn. These findings closely resemble recent American Society of Heating and Air-Conditioning Engineers' data.)

Initial Installation Cost Studied

A major objective of this study was to achieve an overall reduction of the in-place cost of air conditioning in order to make its benefits available to more people.

The in-place cost of year 'round air conditioning includes five items:

1) *Installation cost*—direct labor cost for installation of heating and cooling equipment and air distribution systems (including ducts, registers, thermostats, electrical connections, etc.) for the village:*

High $453
Average $285**
Low $138

*Possibly high due to single house installations.

**Electrical installation was highest single item cost and duct installation was second.

As with other housing components, the trend in heating and cooling equipment is toward increased packaging and simplified installation methods, all aimed at reduction in field installation costs.

Note: the advantages of such a trend are twofold:

a) Reduction of field labor cost.

b) Reduction of field installation problems.

2) *Cost due to interruption of normal construction program*—installation time for village summer air conditioning systems:

High ..... 91 man hours*
Low ..... 28 man hours*
Average ..... 57 man hours*

The number of trips to the job for a crew:

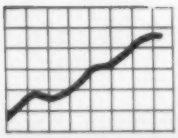
High 7
Low 3
Average 4

*Entrance wiring, gas and water connection not counted—all other electrical and piping necessary for cooling included above.

Note: a survey of small and larger builders' construction schedules shows that the following periods of time are available for summer air conditioning equipment installations for the 1000-1400 sq ft house:

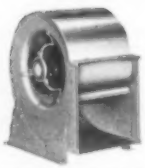
a) In-slab system: ducts, plenum and register boxes must be installed after installation of vapor seal and before installation of reinforcing (if necessary)—time available, half a working day.

(*Continued on page* 97)



When sales go up do you "scramble" for deliveries?

Brundage stocks can save the day



STOCKS INCLUDE

- UNIVERSAL BLOWERS
- DUCT BLOWERS
- BLOWER FILTER UNITS
- EXHAUSTERS
- MOTORS & BLOWER ACCESSORIES

Everyone runs into tight scheduling once in a while. The seasonal quality of the heating and air conditioning industry makes an occasional "hurry up" call unavoidable.

When this happens to you, Brundage is a good name to keep in mind.

New warehouse capacity—coupled with a fast order handling procedure—can help you avoid unnecessary shut-downs. And it can help you take advantage of an up-swing in business that you might otherwise be unable to handle.

MANUFACTURERS: Brundage Universal Blowers can often solve your production problems because they are a stock item and can meet most applications.

Blower specialists since 1919

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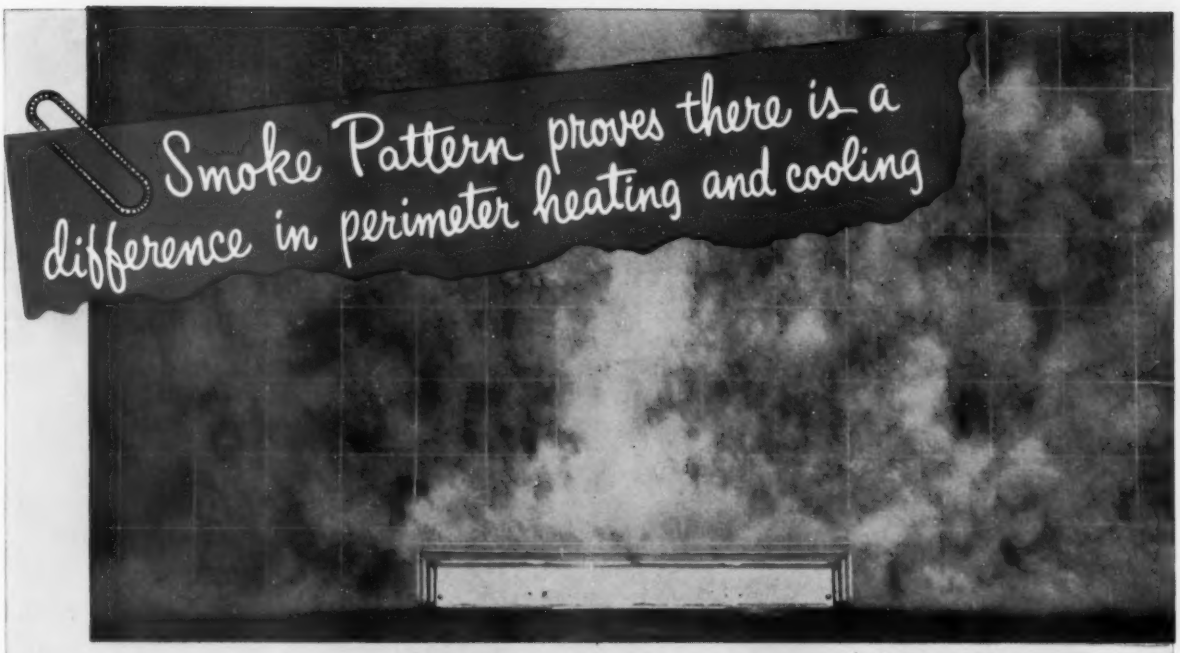

TITUS

Perimeter Diffusers are engineered for

100% DIFFUSION EFFICIENCY

Locating an outlet at the perimeter of a building will not insure a better job. IT'S THE DIFFUSER THAT COUNTS.

Here's Why Titus Perimeter Diffusers Outperform All Others

- Exclusive Titus baffles assure constant 180° diffusion. Fixed boot opening eliminates changing air pattern by relocating opening.
- No pattern change due to damper movement.
- Exclusive Titus baffles and fixed boot opening keep pattern constant at high or low air flow rates.
- Low pressure loss, high capacity requiring less duct runs.
- Greater free areas incorporated with baffles, insuring less turbulence, eliminating drafts and temperature stratification.
- Air directed to higher room levels for efficient cooling and in a broad fan for blanketing wall during heating.
- Saves labor. No metal cutting...no damper installation or other time-consuming problems.
- Diffusers completely assembled...ready to install.

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Titus Manufacturing Corp., Waterloo, Iowa
Gentlemen: Please send me free catalog, including comprehensive engineering data on new TITUS PERIMETER DIFFUSERS.

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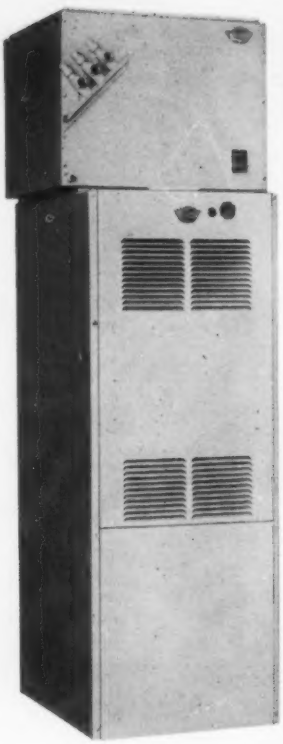
COMPANY

ADDRESS

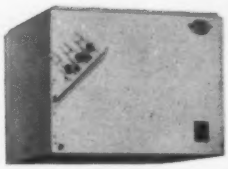
CITY STATE

simple addition for air conditioning profits

REFRIGERATION
(condensing) UNIT
INSTALLS OUTSIDE HOUSE



AN UPRIGHT FURNACE WITH
EVAPORATOR ON TOP



COOLING
(evaporator) COIL
INSTALLS ON TOP OF FURNACE

Utility Weatheramic remote air cooled systems

Every home with any make of forced air furnace is a prospect for Utility's remote air cooled air conditioning units. They're easy to sell because they're economical and easy to install because they come with ⅝" pre-charged lines and tubing in 20 to 50-foot lengths.

Featuring extra-large blowers for greater cooling capacity, the condensing units come in Economy 2-ton, 2-ton, 3-ton and 5-ton sizes.

The evaporator units in 2, 3 and 5-ton sizes contain double (A-type) oversize evaporation coils adaptable to upflow and counterflow type furnaces.

Single coils for horizontal application in attic, basement or crawl space are also available.

Utility remote air cooled units are adaptable to all upright, horizontal and counter-flow forced air furnaces With factory prewiring and other simplified installation features, you can add greater air conditioning profits by using Utility Weatheramic units.

Write for catalog data.

Weatheramic LINE UTILITY

FORCED AIR FURNACES/AIR CONDITIONERS

UTILITY APPLIANCE CORP.:
Manufacturers of Utility Furnaces, Air Coolers, Air Conditioners, Water Heaters and Gaffers & Sattler and Occidental Gas Ranges

UTILITY APPLIANCE CORP. 4851 south alameda street, los angeles 58, california

Export Division: 141 So. El Camino Drive, Beverly Hills, Calif., Cable: UTILIFAN, Los Angeles

Operating Costs Studied in AC Village Tests

(*Continued from page* 93)

b) Under floor or attic system: entire system must be installed after closing in—maximum available time, one working day.

Normal central heating installations are made by average installing dealers within the above schedule; thus time in excess of the above schedule must be considered as producing an added cost due to installation and must be so calculated by each builder on basis of his costs.

Concurrent operations inside house which must be dovetailed into work of air conditioning dealer:

a) In-slab ducts: ducts, registers, etc.—rough plumbing and foundation labor.

Heating and cooling equipment—rough electric, piping topout.

b) Crawl space, basement or attic ducts: ducts and equipment—rough electric, piping topout.

Progress is continuing in the packaging of equipment for year 'round air conditioning that reduces interruptions and delays of builders' operations.

3) *Cost of floor space* (*including unit size and access space required*)—

High	14 sq ft
Low	6 sq ft
Average	9 sq ft

At a nominal cost of $10-$15 per sq ft, the difference between high and low is $80-$120. All test homes were one story without basement.

Note: an early requirement limiting size of equipment to 12 sq ft was met by almost all units.

On the other hand, lack of adequate space provision in the plan for proper access can increase installation cost far more than cost of space requires. The builder is cautioned to allow space in addition to that occupied by the equipment where side or back utility connections are required and manufacturers not already doing so are urged to provide front utility connections thus eliminating this waste space.

4) *Maintenance cost during warranty period*—

High	$46
Low	None
Average	$12

Note: does not include experimental replacement or initial adjustment.

Failure of owner to clean filter causing coil to freeze was reason for most service calls.

Conclusion: allowance by installing dealer or subcontractor of $25 as a first-year service reserve (warranty) seems adequate in Austin or in comparable areas and houses.

The builder should require a service contract from the heating and cooling subcontractor covering the following:

a) Check installation, secure city code approval, check to correct voltage variations, etc.

b) Start up equipment, balance system.

WHAT IS 'AIR CONDITIONING?'

True air conditioning provides comfort in all seasons of the year, according to the American Society of Heating and Air-Conditioning Engineers. The ASHAE has just adopted a new, simplified definition of air conditioning, which reads as follows:

"Air conditioning is the process of treating air so as to control its temperature, humidity, cleanliness and distribution to meet the requirements of the conditioned space."

c) Be sure that the filter is clean.

d) Explain, orally or through pamphlet, the operation of system to owners.

e) Provide responsible service for one year warranty period.

f) Furnish (as part of service contract) all labor and materials necessary for repairs due to faulty equipment or installation affecting comfort of owners during warranty period.

5) *Cost addition for special construction requirements*—vapor seal for ductwork (required in crawl space or attic installation or other non-air conditioned spaces).

a) Insulation: ceiling—nominal 4 in. insulation (may depend on heating requirements). Walls—normally no extra insulation required.

b) Electric: provide 20 amp three wire, 220 volt for 1000-1400 sq ft house (or as required) branch service, in addition to other requirements.

Operating Costs Examined

Operating costs were based on a 12 month period—Oct. 1, 1954 to Oct. 1, 1955. Preliminary operating cost report released last year was based on a period from June 1, 1954 to Oct. 1, 1954. Since that period was not a full cooling season in Austin and all the houses were not occupied for the entire period, it was not used in the following data.

The period covered was average for the area with 1418 degree days of heating and 3286 degree days of cooling. (Cooling based on degree days above 65 F.)

Electric Compressors Studied

Twenty houses using electric compressor equipment are included in the tests and one gas-fired absorption unit. One house was omitted from the tests because of a meter failure.

(*Continued on page* 100)

NOT THIS! *Many heating systems make you uncomfortable. It's too cold at the floor, just right in the middle of the room, too hot near the ceiling.*

BUT THIS! *Waterbury* COMFORTROL *By-Pass Heating gives* CONSTANT *comfort. Tests have shown less than one degree temperature variation from floor to ceiling.*

New kind of heating gives home owners the constant comfort they want

The family at left complains. The family at right recommends its heating contractor to friends. Reason? The family at right has the constant comfort every home buyer expects.

To help you deliver constant comfort, Waterbury has developed COMFORTROL By-Pass Heating.

COMFORTROL works on a very efficient principle. It *mixes* cool air with warm air in a ratio that provides the exact temperature called for by indoor-outdoor thermostats. It supplies this warmth continuously at the same rate it escapes through walls and windows. Waterbury COMFORTROL By-Pass Heating takes maximum advantage of perimeter heat distribution and zone controls. Easily adapted to summer cooling too.

Your customers get constant comfort in every room . . . a continuous supply of fresh, clean, humidified air . . . no hot and cold cycles or drafts. In tests, temperature varied less than one degree from floor to ceiling.

If you've ever needed an extra feature to close a deal, you'll appreciate the talking points alone of Waterbury COMFORTROL.

SEND FOR FREE 32-PAGE BOOKLET!

"It Takes More Than Heat To Be Comfortable". It's packed with interesting information that will help you sell more units. Write Waterman-Waterbury Company, 1122 N.E. Jackson Street, Minneapolis 13, Minnesota.

Waterbury helps you SELL!

Waterbury Comfortrol BY-PASS HEATING

By the makers of world-famous Waterbury furnaces and air conditioners

Auer

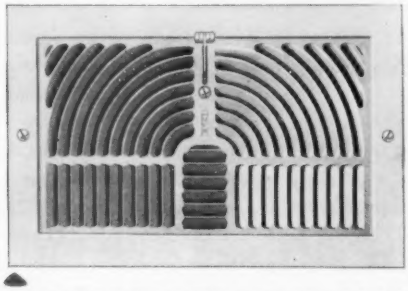
REGISTERS and GRILLES

Fill Every Heating and Air-Conditioning need

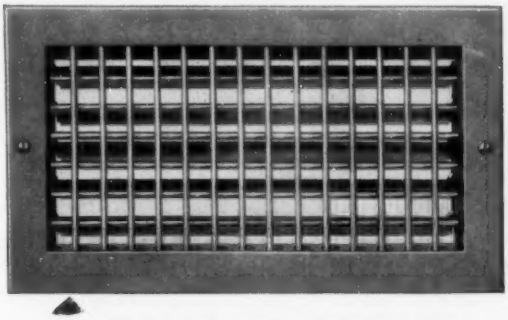
You'll find the answer to all your commercial and domestic register problems in Auer's complete line of registers and grilles. Available for quick delivery in a wide variety of standard styles and sizes to fill the most exacting specifications.

Auer registers and grilles are engineered and built to high standards of uniform quality and accuracy to assure ease of installation with a minimum of on-the-job time loss. They are decorator-designed to enhance both modern and traditional decor while providing the utmost in air-flow efficiency.

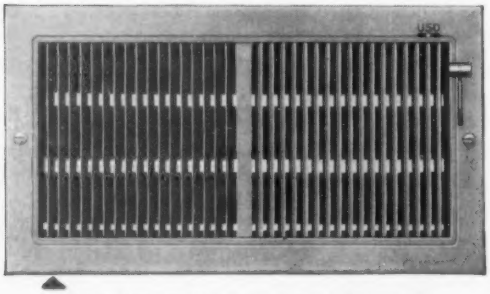
Shown here are a few of the items featured in Auer's "complete-for-every-need" line.



Auer No. 200 Series: for high or low sidewall installation . . . can be used as ceiling outlet . . . blankets entire wall areas with perfect air-pattern.



The Auer Streamliner series – designed for quiet operation with high velocity air conditioning systems – available with single banks of adjustable bars, vertical or horizontal, also with a double bank, vertical in front and horizontal in back (or the reverse).



No. 4432 – Airo-Flex Wall Register – multi-louvres are adjustable to direct air – upward, straight or downward – flexible vertical fins provide right or left deflection for five way control.

Auer DRP Floor Perimeter Registers are available in 2¼ x 14 inches and widths of 4 and 6 inches and in lengths from 10 to 14 inches. Features built-in adjustable damper – attractive appearance and provides large fan-shaped air circulation pattern.

In addition to these items, the Auer line includes ornamental perforated grilles, available in cold rolled or stainless steel, bronze, brass, and aluminum.

Write for complete descriptive literature on Auer's complete line of "Registers and Grilles for Every Need".

Auer REGISTERS and GRILLES

THE AUER REGISTER COMPANY

6602 CLEMENT AVENUE • CLEVELAND 5, OHIO

Austin Tests Relate Costs to Cooling Load

(*Continued from page 97*)

1) Electric compressor units (20 houses):

a) Electric energy consumption for year 'round comfort:

High .... 9873 kwhr (includes 839 kwhr for heating)

Low ..... 2580 kwhr (includes 122 kwhr for heating)

Average .... 5558 kwhr (includes 368 kwhr for heating)

(One house required only 1861 kwhr; however, unit was operated only at night since husband and wife both worked).

b) Gas consumption (heating only):

High ..... 61,666 cu ft

Low ..... 20,000 cu ft

Average ..... 38,333 cu ft

c) Water consumption for water cooled equipment tested:

High ..... 20,700 gal for cooling season

Low ..... 7800 gal for cooling season

Average .... 10,860 gal for cooling season

d) Average cost year 'round comfort (Austin rates):

Electric .. 5558 kwhr @ $0.016	$89.93
Gas .... 38,333 cu ft @ $0.0004	$23.00
Water .... 10,860 gal @ $0.00025	$2.72
	$115.65

The monthly average cost of $9.65 is not comparable because high and low operating cost figures will probably vary to a greater degree in this study than would normally be expected because an inherent part of the study was the testing of certain designs and materials that produced wide variation in heat gain. As a matter of fact, the average operating cost is higher than could be achieved since certain high heat gain designs were deliberately incorporated in some of the units to secure test data. For this and other reasons operating cost data is not comparable between the above electric and gas energy units or between the individual electric units tested during the survey.

e) Total electric energy consumption, including lights and appliances:

High ..... 13,850 kwhr

Low ..... 5945 kwhr

Average ..... 9734 kwhr

Thus only 57 percent of total electric energy used was chargeable to cooling in Austin).

2) Gas absorption unit:

a) Energy consumption for year 'round comfort:

Electric .. 1463 kwhr (includes 153 kwhr for heating)

Gas .... 13,000 cu ft (44,000 cu ft for heating)

Water ..... 20,700 gals

b) Cost year 'round comfort:

Electric 1463 kwhr	@ $0.016	$23.41
Gas 138,000 cu ft	@ $.0006	$82.80
Water 20,700 gals	@ $.00025	$5.17
		$111.38

Based on the Austin village study, the average electric energy requirement during the cooling season is equal to 283 kwhr per 1000 Btuh calculated heat gain (based on 1955 National Warm Air Heating and Air Conditioning Association Manual 11). It should be recognized also that the cooling season in Austin is longer, and the daily temperatures higher than for most of the country. The amount of energy required for cooling would be reduced proportionately where milder climates result in less hours of equipment operation.

Some Appliances Raise Temperature

The following comments or recommendations are made for major appliances based on village tests.

1) Range: cooking produced an instantaneous heat gain generally during the peak cooling load period. This heat gain was minimized by using an exhaust fan of 300 cfm (minimum) either thermostatically controlled or switched to the range. Even with exhaust fans some rise in temperature in the kitchen should be expected during cooking operation.

2) Water heater: water heater flue exhausts 80 percent of heat gain. Special water heater closet vents to attic, or outside are not practical since cost of replacing cold air exhausted through such vents with warm air is greater than cost of absorbing heat from water heater. All water heater tanks used in the village were installed.

3) Dishwasher: average heat gain over 24 hour period is not high enough to warrant remedy.

4) Clothes washer: average heat gain over 24 hour period is not high enough to warrant remedy.

5) Clothes dryer: dryers discharging hot humid air should be vented to outside of conditioned space.

6) Shower: instantaneous heat and humidity gain generally occurs at low demand time; thus absorption by air conditioning equipment is more economical than providing special solution.

Study Value of Sunshades

Use of sunshades in reducing heat was also studied. Discomfort from sun on glass is more a measure of mean radiant temperature than air temperature. Thus, to secure comparable values of sunshade devices, measurements were made of room mean radiant temperature with two sphere radiometer. Table 2 summarizes the findings.

Sound control installed by the manufacturer in the

(*Continued on page 104*)

Comfort is always in style

when you use...

Standard Stamping's ceiling air diffusers

FULL DIMENSION COMFORT

...winter and summer

No matter what the temperature outside, it's always comfortable inside when you use Standard's Ceiling Air Diffusers. They supply gentle, full dimension warm air heating in the winter, and cool comfort air conditioning in the summer.

SMART STYLING

Circular, streamlined design makes these diffusers perfect for use with modern ceiling materials. They also blend well with traditional interiors. They're finished in attractive baked-enamel, and custom finishes can be supplied.

TWO BEAUTIFUL DESIGNS

Standard's Diffusers are available in five flush and five extended models sized for 6" to 14" ducts. A baked on metallic finish is standard, and custom finishes can be supplied. Standard makes a complete line of accessories, too, including dampers and installation rings.

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Gentlemen: Please send me literature describing your CEILING AIR DIFFUSERS.

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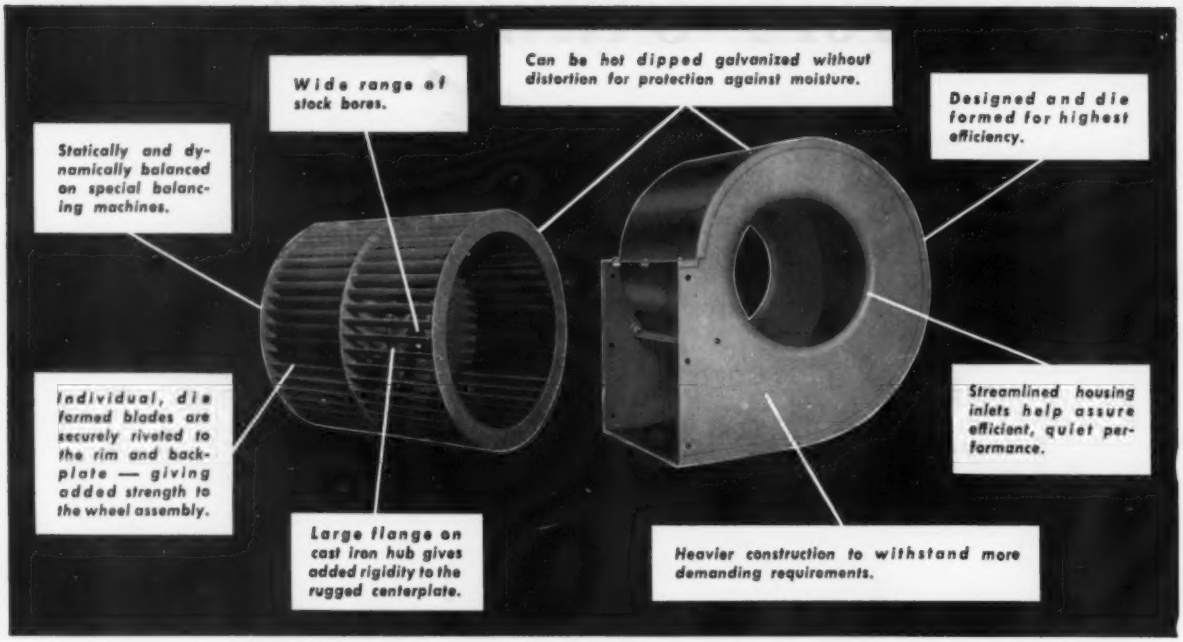

Wide range of stock bores.
Can be hot dipped galvanized without distortion for protection against moisture.
Designed and die formed for highest efficiency.
Statically and dynamically balanced on special balancing machines.
Individual, die formed blades are securely riveted to the rim and backplate — giving added strength to the wheel assembly.
Streamlined housing inlets help assure efficient, quiet performance.
Large flange on cast iron hub gives added rigidity to the rugged centerplate.
Heavier construction to withstand more demanding requirements.

HIGH PRESSURE REQUIREMENTS?

Clarage has what it takes!

. . . for pressures up to 8" with modifications from standard construction! Clarage Type DF equipment — Wheels and Housings or Complete Fans — is equipment to investigate for your Air Conditioning Units, Cooling Towers, Evaporative Condensers, etc.

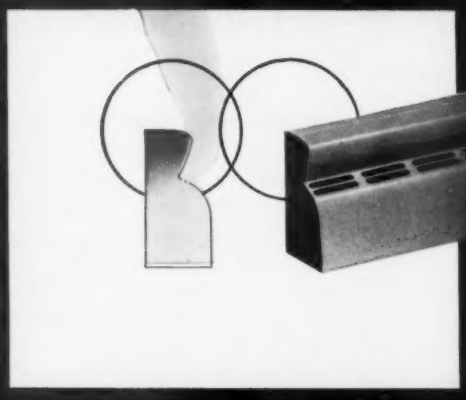
Don't short-change the products you make by incorporating anything less than Clarage quality — *known* quality that has *proved* its worth to other leading manufacturers.

Check on the increased saleability you, too, will experience with dependable Clarage Type DF fan equipment. CLARAGE FAN COMPANY, Kalamazoo, Michigan.

Complete Type DF fans are available in 11 sizes with capacities ranging from 200 to 10,000 CFM. Special units for higher pressures and more severe services can also be furnished.

CLARAGE . . . *dependable equipment for making air your servant*

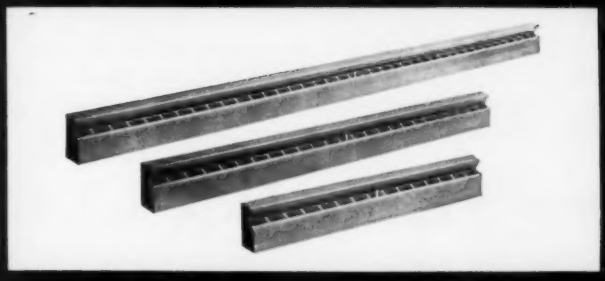
SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal



Exclusive Plenum Chamber . . . this feature found **only** in Thermo-Base . . . automatically provides **even** pressure and end-to-end air distribution **at any rate of delivery** . . . at even the lowest air volumes. Thermo-Base takes the forced-air feel out of the forced-air system. It's plenum does the job.

Three Important Reasons

Eight, Five and Three foot Lengths . . . for faster more economical installations . . . Eight foot lengths **eliminate extra runs** . . . **ONE RUN** to this long length of Thermo-Base saves many dollars on every installation. It is the most profitable line available . . . America's outstanding baseboard distributor.



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BASEBOARD · HEATING · COOLING

New Modern Design . . . this new beauty is more than skin deep . . . the unapproached comfort resulting from your use of Thermo-Base assures complete consumer satisfaction . . . is so certified and guaranteed. A written comfort guarantee that turns quotations into sales.

Consult Your WHOLESALER

for additional information address: Thermo-Base Division, Gerwin Industries, Inc., Michigan City, Indiana

AC Village Tests Uncover Noise Sources

(*Continued from page* 100)

TABLE 2—SUNSHADES WERE tested to determine their effect in reducing heat

	Mean Radiant With Device	Temperature Without Device	Difference†
Reflective screen	84 F.	87 F.	3 F
Venetian blinds (white or aluminum)	80 F.	80 F.	0
Fly screen	85 F.	86 F.	1 F
Awnings (average of types used)	82 F.	86 F.	4 F
Double vs single glazing	80 F.	80 F.	0
Clear vs heat absorbent glass	80 F.	80 F.	0

†Differences of 3 F or 4 F produced significant comfort effect on occupants.

equipment cabinet has reduced the noise problem encountered in the village. However, the following causes for noise problems can be avoided by the builder through planning and control over installation:

1) Wood platforms acting as return air chambers proved to be sounding boards for compressor and fan noises. Rubber or felt deadeners between the equipment and the box reduced, but did not entirely eliminate, the noise. Installation of the equipment directly to a concrete floor with a return air duct eliminated this particular noise.

2) Plywood walls of a utility closet touching the equipment also acted as a sounding board. Clearance between equipment and wall proved to be a necessity with a layer of sound deadening material required to solve the problem. Drywall produced no "sounding board" effects as produced by plywood.

3) More vibration noise was produced by units in small completely enclosed closets containing no sound deadening than by units located in part of a utility area.

4) Return air grilles connected directly to the equipment or connected to the equipment by short metal ducts produced excessive fan noise in the areas near the register. A two-bend sound baffle constructed of sound deadening material or a canvas sleeve connection were acceptable solutions.

5) Liquid and suction lines anchored directly to the equipment and to the frame without proper fittings had to be replaced.

6) Duct and register noise was frequently objectionable. Insulation inside the plenum, proper anchoring of ducts and registers, and flexible connections between the equipment and plenum reduced the level to acceptable limits.

(Note: the material listed above is only a part of the report printed by the National Association of Home Builders' Research Institute. The complete report may be obtained by writing to National Association of Home Builders, 1625 L St., N.W., Washington, D.C. Price of the report is $2. Other important facts uncovered during the two years of research and testing not reported here included certain merchandising data interesting to dealers for the purpose of promoting sale of year 'round air conditioning equipment; general financing information; calculation of equipment size and installation and use of equipment.)

New Records Expected for Construction Outlays

OUTLAYS FOR NEW CONSTRUCTION are expected to reach new highs in 1956 with a total of $44.5 billion predicted, 4 percent above the 1955 figure, according to revised outlook estimates prepared jointly by the Departments of Commerce and Labor.

Actually the figure reflects very little change seen by the same agencies last November. At that time a $44 billion figure was predicted, but the newer estimate figures new housing will decline more, while utilities, private industrial buildings and highways will show greater gains, the report states.

The present outlook for construction assumes that the current high level of overall activity will remain relatively stable, and that disposable income of consumers will continue at record levels. Construction costs are expected to continue to rise moderately, the agencies predict.

Present prospects are for private construction outlays in 1956 to total about the same as in 1955 — $31 billion. Public spending for new construction is expected to advance 9 percent to $13.5 billion.

The government agencies expect that about 1,150,000 new nonfarm dwelling units will be started this year. This compares with an earlier estimate of 1,200,000 for 1956 and a 1955 total of 1,310,000. On a seasonally adjusted basis, private starts during the first five months of this year were at an annual rate slightly below 1,150,000. The projected $13.75 billion of expenditures on privately owned new dwelling unit construction in 1956 — 8 percent below the $15 billion record level of 1955 — reflects a partial offsetting of the effects of the anticipated 12 percent drop in dwelling units started by a rise in construction costs and a continuing trend toward larger homes with more quality features.

Main reason for the decline in new homebuilding, the report claims, is because of the scarcity of funds for long term, low down payment mortgages at low interest rates. But the increased outlays for highways, private industrial plants, utilities and commercial buildings should more than offset the decrease in new housing activity. New records for nonresidential categories are expected.

The value of work put in place both on highways and on privately owned public utilities will go over the $5 billion level for the first time in 1956, the report states. Most significant gains among the utilities will probably occur in railroad, telephone and telegraph, gas plant and electric light and power facilities. Private spending for new industrial plant expansion may reach the $3 billion level, and new commercial building outlays probably will exceed $3.4 billion.

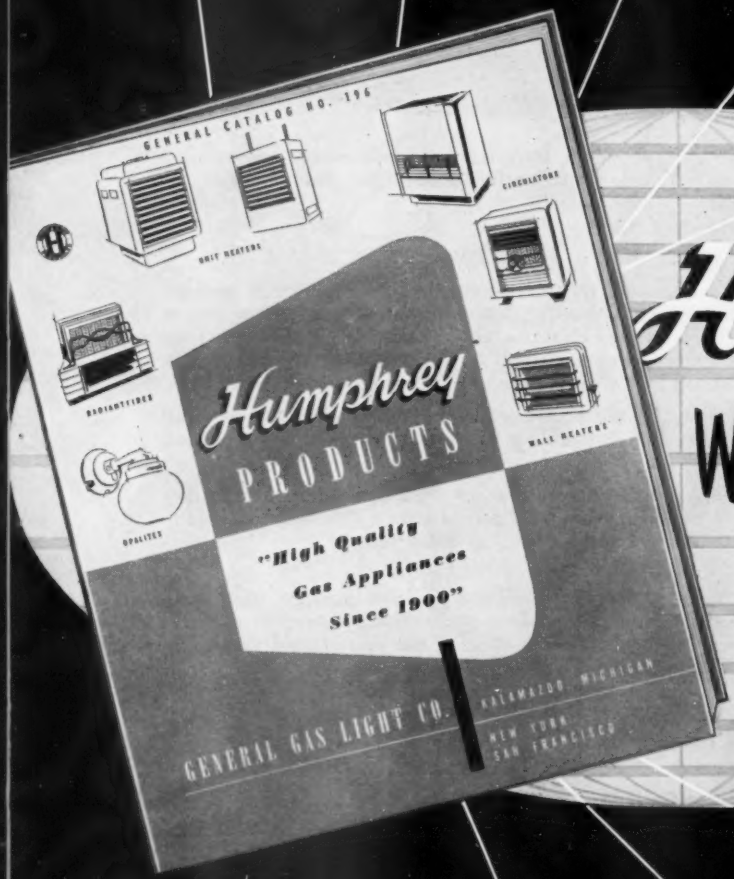
Model A
GAS UNIT HEATER
65,000 TO 250,000 B.T.U.

Model 40-G
COMPACT UNIT HEATER
40,000 B.T.U.

COOL CABINET CIRCULATORS
22,000 OR 32,000 B.T.U.
2 FINISHES

VENTED, RECESSED WALL HEATERS
CHOICE 3 DECORATOR COLORS

RADIANTFIRES
WIDE RANGE OF MODELS



Humphrey

World's Most Respected Gas Heating Line

WRITE FOR THIS
FREE
CATALOG

OPALITE GAS LAMPS

RAFIRE BATHROOM HEATERS

Series HV
RADIANTFIRE CIRCULATORS
WITH "TOPTROL"
5 SIZES, 30,000 TO 70,000 B.T.U.
2 FINISHES

GENERAL GAS LIGHT CO. *Kalamazoo, Michigan*

Tecumseh

AIR CONDITIONING

FACT SHEET NO. 1

Bob—
This is good information to file. Looks to me like Tecumseh has the answer to our performance problem
RBI

The varied and often difficult conditions associated with air conditioning led Tecumseh to develop the only complete line of hermetic compressors specifically designed for this application. Here is what Tecumseh did to provide peak performance under the toughest conditions.

PROBLEM: Frequently in air-cooled year-around systems, the compressor is located in confined areas which tend to develop high ambients. When this occurs compressor heat is not properly dissipated, head pressure increases, and the customer experiences little or no cooling due to the reduction in efficiency. As the condition becomes critical, the compressor will be cut off by the overload and the system will not cool.

If line voltage drops below the rated voltage of the compressor, the overload again will cut off the compressor, and cooling will not be available when needed.

SOLUTION: Tecumseh designed their compressors to allow for these conditions. First, they deliver full capacity at 90° ambient with a 45° coil. Further, they will continue to operate and cool at 120° ambient and/or 90% of rated voltage!

RESULT: By avoiding nuisance trips under high ambient or low voltage conditions, Tecumseh eliminates costly service calls making your customer happier with his installation. This is one reason why almost 50% of the year-around systems in use today use Tecumseh compressors.

BE SURE OF YOUR INSTALLATION!

Be Sure the Year-Round Air Conditioner You Install Uses a Tecumseh Compressor

OVER 25,000,000 COMPRESSORS IN USE TODAY

TECUMSEH PRODUCTS CO. | *Tecumseh, Michigan* *Marion, Ohio*

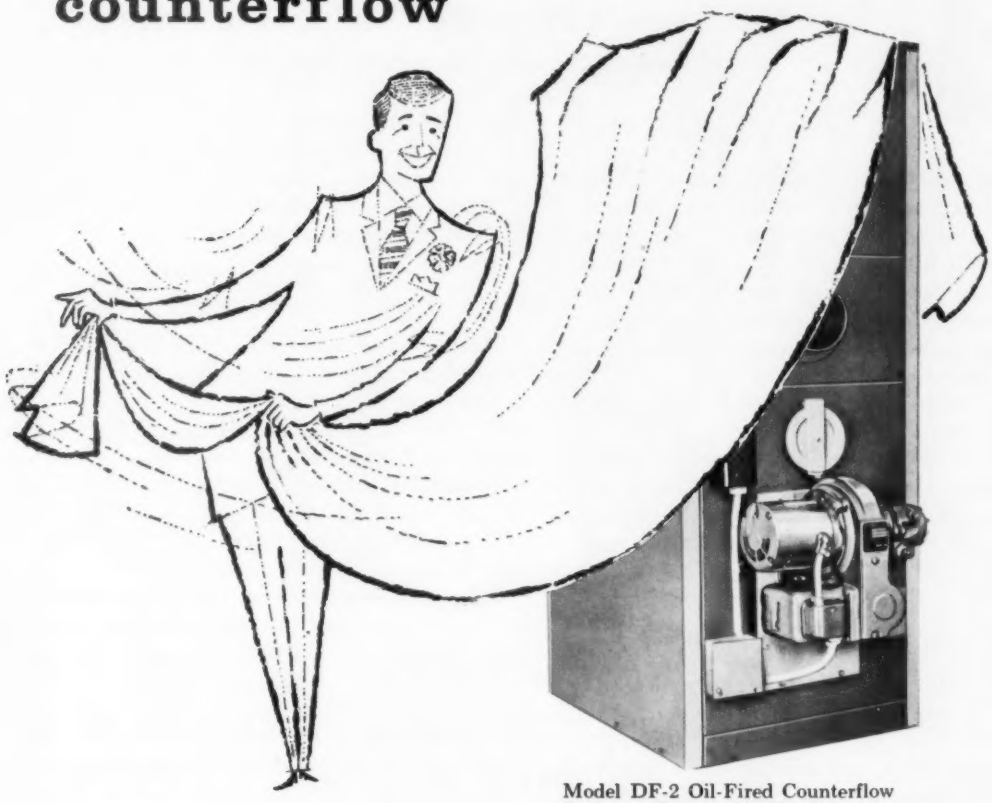
TECUMSEH

THE WORLD'S LARGEST PRODUCER OF AIR CONDITIONING COMPRESSORS

INTRODUCING!
a great NEW
HEIL
counterflow

Here's your answer to the heating problem in today's modern, one-story homes — Heil's great new DF-2 oil-fired counterflow! Ideal for use with perimeter and floor panel heat distribution systems, the new DF-2 offers snug heating comfort for snug quarters — *and*, as one of the *Parkway* series, pleases even the trimmest heating budget.

Utilizing the latest principles in counterflow design, the new DF-2 draws in air from above . . . filters and circulates it slowly past many heating surfaces . . . discharges the uniformly heated air through a duct system below the floor.



Model DF-2 Oil-Fired Counterflow
Parkway Winter Air Conditioner

- Sound Construction . . . from top materials and workmanship!
- Modest Space Requirements . . . OK'd for closet or alcove space!
- Economical Installation . . . pre-assembled and pre-wired!
- Extreme Accessibility . . . all vital parts in easy reach!
- Efficient Combustion . . . "Focused Flame" saves fuel money!
- Maximum Heat Transfer . . . 16% broader contact surface!
- Quiet Operation . . . real "whisper" quiet!
- Good Looks . . . complements any utility area!

RATING DATA

Bonnet Capacity, BTU per hour	112,000
Normal Air Delivery (at 90° rise) CFM	1,090
Oil Firing Rate, GPH	1.0

Write for Specifications sheet.

maximum heat in minimum floor space delivers a steady sales current!

Alert Buyers insist on Good Heating...
Alert Dealers offer them HEIL!

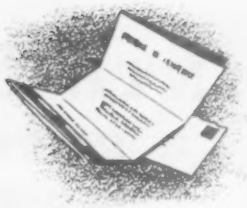
THE HEIL CO.

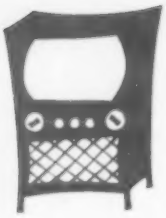
3081 W. Montana St., Milwaukee, Wis. Hillside, N. J.

SALES OFFICES: Union, N.J.; Atlanta, Ga.; Cleveland, Ohio; Chicago, Ill.; Milwaukee, Wis.; Kansas City, Mo.; Denver, Colo.; Dallas, Texas; Los Angeles, Calif.; Seattle, Wash.

The Heil Co. is a member of OHI, GAMA and an associate member of NHWA.

Cooperative Sales Promotion Tells Humidifier Story





. . . when 20 heating-air conditioning dealers undertake a direct mail-TV advertising campaign which emphasizes health advantages of humidifiers

A MERCHANDISING PROGRAM to acquaint residents of the Minneapolis-St. Paul area with the advantages of sufficient humidification in their homes during the winter season has recently been conducted by Lowell Swenson, Wholesale Heating Supply Co., Minneapolis. Mr. Swenson, with the cooperation of 20 warm air heating dealers, worked out a program whereby inquiries received as a result of the merchandising plan would be divided on a predetermined basis and sales calls would be made on the prospect immediately.

Two approaches were used in the merchandising plan: 1) a direct mail program to include all doctors practicing in the metropolitan area; 2) a television program which offered viewers an indicator that would tell them if the air in the house was too dry.

Mailings to Doctors Tie Health to Humidity

The mailing pieces sent to the doctors reminded them that dryness in a home during the winter could be eliminated and pointed out how low humidity dries out the mucous membranes in the nose, making patients susceptible to colds, how dry air aggravates sinus and bronchial conditions and that air in the average house during cold weather is drier than the Sahara desert. The doctors were invited to have a humidifier installed in their heating systems both at home and in their offices. About 3500 of these mailing pieces were sent out to doctors. There were over 100 responses to this approach.

It was felt that such a mailing list would remind the doctors of the importance of humidification and cause them to recommend the purchase of humidifiers to patients experiencing discomfort that could be reduced by proper humidity in the home.

The second step in the mechandising program — the TV phase — was more expensive but it was felt at the end of the 13 week contract that more people had heard the humidification story, and the long range benefits of such a program would compensate for the greater expense. So far, the cash spent for the program about equals the profit increase over normal sales during the season. Thus, additional sales will show an increase in profit for those cooperating in the program. One obvious result of the television program is that sales were noticeably easier to make after the program started.

Variety Show Directed to Family

The television campaign included a one minute spot announcement following an evening show, a five minute daytime weather show and co-sponoring a 60 minute variety show slanted to the family and headlined by a popular local announcer, Mel Jass. The co-sponsors were merchants with products of interest to the home owner. One of the features of each program was a ten minute period devoted to hints for the home owner. This fitted into the announcements made by Mr. Jass.

The announcements on the value of humidification in the home were varied with each show. Mr. Jass, upon absorbing the principles projected in the literature Mr. Swenson supplied, ordered a humidifier for his own home. Convinced of the value of his investment, he became an enthusiastic humidifier salesman. Each commercial was written by Mr. Jass and each show used a different approach. However, at the conclusion of each announcement, viewers were invited to send for a folder which presented further details about the importance of humidification in the home. The folder also contained an indicator which would tell the home owner if he needed humidification.

Folder, Indicator Draw Big Response

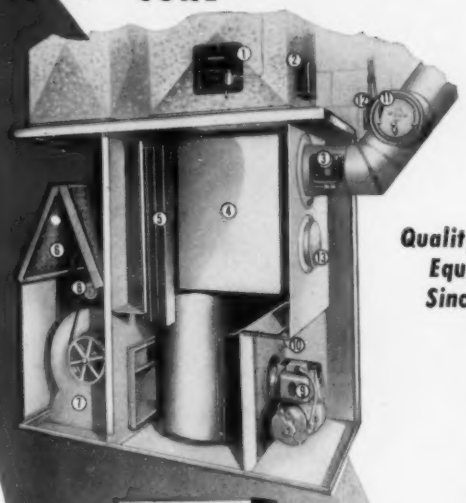
The folder, labeled Low Humidity, depicted an evil "Devil Dryness" — a vague, dragonlike animal with one huge eye. The sales message began, "If my eye turns blue, your air is too dry and your family needs humidification," and continued, "Obtain better health, protect your furnishings and reserve greater comfort from a humidifier."

Mr. Jass closed his commercial with an invitation to the viewers to write him for one of the folders. Over 2000 inquiries were received. Now the inquiries are being followed up by the dealers.

VICTOR

GAS • OIL • COAL

A Look Inside a
VICTOROIL
SERIES "W"

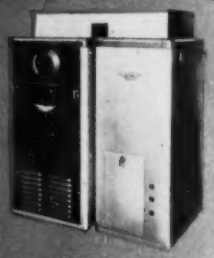


1. Humidifier (optional).
2. Burner limit and blower control.
3. Protector relay.
4. Heat exchanger.
5. Fins.
6. Filters (throw away type).
7. Blower.
8. Blower motor.
9. Oil burner.
10. Flame inspection door.
11. Barometric damper.
12. Main switch, either on furnace or wall.
13. Cleanout.

Quality Heating Equipment Since 1890

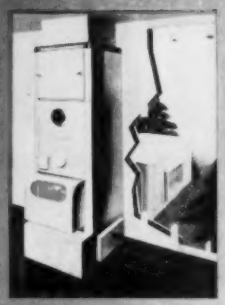
Counter-Flo

Hi-Boy



Central Cooling Companion Basement Model

VICTORAIRE



Horizontal Air Cooled Unit with Remote Air Cooled Condenser

COOLING UNITS

Remote Air Cooled Condenser-Compressor Unit With Duct Evaporator

THE *Complete* VICTOR 1956 LINE *for* GAS-OIL-COAL FURNACES *and* SUMMER COOLING UNITS

In all Hall-Neal history there has never been a more complete, more skilfully engineered, more quality built line of heating and cooling equipment. Since 1890 the name VICTOR has been famous for quality furnaces. They are the furnaces with FUEL-SAVING FINS . . . an exclusive, patented VICTOR feature. Make your 1956 line one with which you can successfully compete for any job . . . with VICTOR!

Investigate! Mail Coupon TODAY.

HALL-NEAL FURNACE CO. 1322-42 N. CAPITOL AVE. INDIANAPOLIS 7, IND.

Gentlemen: Send full details on an EXCLUSIVE VICTOR GAS-OIL and COAL FRANCHISE for BIGGER PROFITS IN 1956.

Name_____

Firm_____

City_____ State_____

"SAFETY-SYSTEM" INDIVIDUAL GAS VENT TABLES

4 INCH SIZE

VENT DIAMETER, INCHES	LENGTH OF LATERAL, FEET	Total Height of Vent (in feet) from Draft Hood to Top								
		4	6	8	10	15	20	30	40	50
		Allowable Span of Vent Operation, Expressed as Rated Hourly Heat Input (1000 BTU Per Hour) of Gas Appliance Being Vented.								
4 INCH SIZE	0 No lateral	6 to 80	7 to 86	8 to 95	11 to 102	14 to 115	18 to 120	33 to 131	46 to 137	61 to 140
	2	6 to 57	8 to 67	11 to 75	12 to 81	16 to 95	23 to [illegible]	35 to 115	52 to 127	66 to 128
	5	7 to 55	11 to 64	13 to 71	16 to 78	22 to 91	27 to 100	41 to 113	55 to 120	77 to 123
	10	10 to 53	17 to 60	19 to 66	22 to 74	27 to 85	36 to 95	50 to 108	65 to 115	80 to 120
	15	[illegible] 50	[illegible]	29 to 63	31 to 69	35 to 81	44 to 90	59 to 102	72 to 110	94 to 115
	20	16 to 49	[illegible]	[illegible] to	41 to 65	45 to 77	50 to 85	72 to 99	83 to 108	105 to 112
	25	25 to 46	[illegible]	[illegible]	50 to 62	55 to 73	60 to 79	79 to 95	S and C	S and C
	30	S* and C	S and C	S and C	S and C	S and C	S and C	S and C	S and C	S and C

NEW

Shown above is 1 of 10 Metalbestos tables covering almost every type of gas vent installation.

"Now it's easy to do every job right!"

No more job-site guesswork — no more hit-or-miss installations. With Metalbestos "Safety System" Tables you can now find the right answer quickly to even the toughest gas venting problem . . . complete the job faster and leave confident of no costly call-backs.

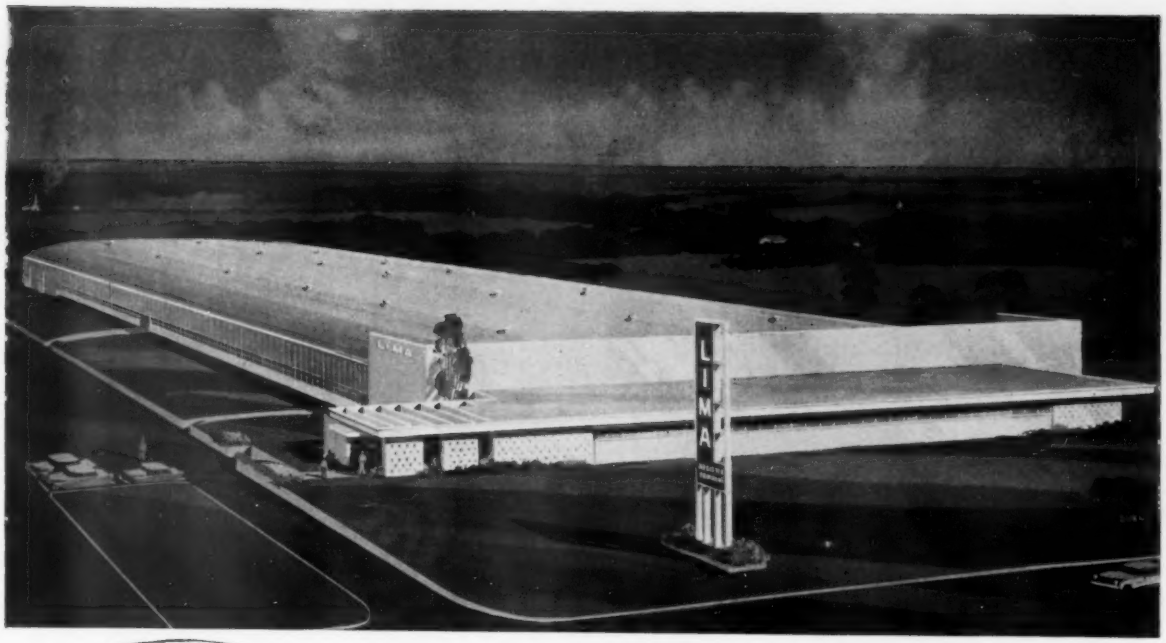
Based on scientific research, laboratory tests and field investigations, these new tables give you the correct relationship between **vent diameter, length of lateral, BTU heat input** and **total vent height** for individual runs . . . **vent connector diameter, connector rise, BTU inputs, vent heights** and **common vent diameter** for combined runs.

Thus, you can easily work out the most economical venting combination for each job — and know it's safe. **ORDER YOUR FREE COPY TODAY** — Your Metalbestos jobber has a limited supply of the new "Safety System" Gas Vent Tables — so order now and avoid delay. Or write to Dept. B-8

ANOTHER FIRST BY THE LEADER IN GAS VENTING

METALBESTOS DIVISION

Stocked by principal jobbers in major cities. Factory warehouses in Atlanta, Dallas, Newark, Des Moines, Chicago, New Orleans, Akron.



LOOK TO Lima
To Boost Your Sales

LEADERSHIP THROUGH RESEARCH
to help the steady growth of your business.

NEW PRODUCTS AND SIZES
to help you serve all the needs of your customers.

BETTER AND FASTER SERVICE
to save you time, space and money.

PROFITABLE SALES AND ADVERTISING TOOLS
to help you promote your business.

EXTRA QUALITY CONSTRUCTION
at competitive prices.

MORE EFFICIENT PERFORMANCE
to reduce service calls and complaints.

With the big new all-modern Lima plant in full operation, you will find it more profitable than ever to install Lima diffusers, registers and grilles.

Lima's expansion program now offers you a rapidly expanding line of extra quality products at competitive prices . . . and the best possible service.

Send today for Lima's new complete catalog showing more new items and sizes, and see for yourself why it will pay you to look to Lima to boost your sales.

NEW LIMA CATALOG
Just Off The Press

Write today for your free copy of this complete 32-page catalog

Lima REGISTER COMPANY • Lima, Ohio

Sold exclusively through heating wholesalers and manufacturers.

YOU AND THE LAW

When Are Employee Contracts Binding?

Courts rule that agreement for employment must be in writing or the action performed within a year before the contract is binding

A LAW ENACTED many years ago in England has the following prohibition: "No action shall be brought upon any agreement that is not to be performed within the space of one year from the making thereof, unless the agreement upon which such action shall be brought, or some memorandum or note thereof, shall be in writing and signed by the party to be charged therewith." Today the substance of this statute is the law in every state in the country.

Salesman Hired by 'Phone

A salesman from a midwestern state was interviewed by an officer of a company for employment. Following the interview the salesman received a telephone call telling him his employment had been approved by the executive committee of the company, and he should begin work two days later. When the salesman was discharged he brought suit against his former employers, charging that the company had discharged him in violation of his employment agreement.

Contract Must Be in Writing

In that state the statute patterned on this old English law provides: "Every agreement, contract or promise shall be void unless such agreement, contract or promise or some note or memorandum thereof be in writing and signed by the party to be charged, that by its terms is not to be performed in one year from the making thereof."

In its denial of the salesman's right to any damages in this suit for breach of contract, the court said:

"He accepted the proposed contract for a year's employment on June 22, and he was to begin work on June 24. This oral contract for his employment was not possible of performance within one year from June 22 and was void under the statute as an 'agreement that by its terms is not to be performed in one year from the making thereof.' "

Time Specification Needed

However, agreements under which a salesman is employed for no definite time are not governed by this feature of the statute. Of such a situation a court in a far western state said of an indefinite employment contract:

"We think there is no merit in the contention that the contract herein was invalid by reason of the statute that requires 'an agreement that by its terms is not to be performed within a year from the making thereof' to be evidenced by writing and 'subscribed by the party to be charged.' This rule does not apply to contracts either express or implied for the rendition of services for an indefinite period of time."

Another situation involving application of this law is determining validity of the contract when a written contract for more than a year has expired, and the salesman continues working under the terms of the old agreement with no new agreement.

In one of the southern states an employee under a five year contract continued work for more than two years after the expiration of his contract when he was summarily discharged. Suit was brought by the employee, who contended the five year agreement had been automatically renewed under the law for a similar period when he had continued to work after the expiration of the original agreement.

Contract Renews Itself

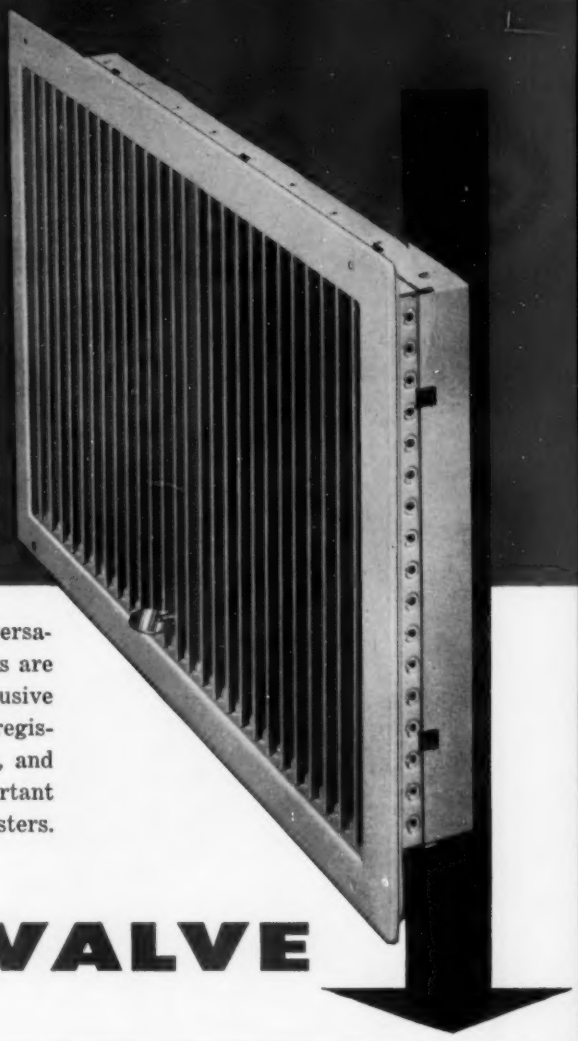
"When an employment contract is for a year and no longer, there is a presumption that the agreement continues on the terms of the original agreement," said the court in this instance.

Of the contention made here, however, that a written employment contract for more than a year is automatically renewed for a similar period of time by the continuation of the employment, it has been held by the courts of an eastern state that:

"The law will not imply an unwritten contract which the parties themselves could not make without writing. The law will not make that valid without a writing which the law requires should be in writing."

[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]

MULTI-TROL
COMMERCIAL REGISTERS
by Air Control
GIVE YOU THIS BIG DIFFERENCE*

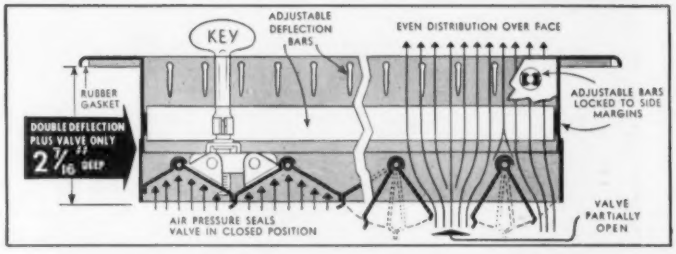


With Multi-Trol commercial registers you get performance and versatility no others can equal. Where ordinary commercial registers are too deep to be used with standard ducts, Air Control's exclusive Shallo-Valve solves the problem. Multi-Trol 4-way deflectional registers with Shallo-Valve can be installed in standard 3¼" ducts, and still leave ample space for adequate air flow. That's the important difference between Multi-Trol and any other commercial registers.

New* SHALLO-VALVE

EXCLUSIVE WITH MULTI-TROL COMMERCIAL REGISTERS

Multi-Trol Shallo-Valve louvers are the opposed-action type, designed to deliver air evenly over the face of the register at any velocity. When closed, air pressure seals the valve tightly, preventing annoying whistles. Adjustable bars and opposed-action valves provide positive 4-way control of the air stream. The Shallo-Valve of Multi-Trol registers, only 2½" deep, requires no special duct work in commercial or residential heating-cooling installations.


KEY
ADJUSTABLE DEFLECTION BARS
EVEN DISTRIBUTION OVER FACE
RUBBER GASKET
DOUBLE DEFLECTION PLUS VALVE ONLY 2 7/16" DEEP
ADJUSTABLE BARS LOCKED TO SIDE MARGINS
AIR PRESSURE SEALS VALVE IN CLOSED POSITION
VALVE PARTIALLY OPEN

Only Multi-Trol commercial registers by Air Control offer you all these advantages:

Key-operated Shallo-Valve — Minimum Air Resistance — Air Foil Contour Face Bars — Modern Styling with smooth, rounded corners — Handsome beige finish. Pivots of adjustable face bars are locked into margin, can't pull out.

Multi-Trol registers and grilles come in a wide range of sizes and styles for every need. See your favorite jobber.

WRITE FOR CATALOG 56-AC SHOWING THE COMPLETE MULTI-TROL* LINE

*Patent Pending

AIR CONTROL PRODUCTS, INC., Dept. A, Coopersville, Mich.

LET'S GET DOWN TO

Brass Tacks on Residential Air Conditioning

Any generally accepted definition of Air Conditioning embraces both heating and cooling, together with air distribution, air cleaning and humidification.

It would logically follow that in the case of residential air conditioning, knowledge of these related functions would be vital for successful merchandising.

Here then is another of the several reasons why the warm air heating-sheet metal dealer has proved to be the most effective sales outlet for residential air conditioning. He is the one who has all the qualifications for the job.

Doing warm air heating and residential air conditioning is his business. It's not a sideline. It's not what he contemplates doing or what he might be persuaded to do. IT'S WHAT HE DOES, and it isn't necessary to search for him among plumbers, refrigeration men, oil burner dealers, gas heat dealers, etc.

Instead, you can reach him with greatest economy through the pages of AMERICAN ARTISAN, the book whose editorial performance has always attracted and held as PAID subscribers the KEY dealers in this field. American Artisan covers the greatest concentration of buying power . . . provides the only fully paid (ABC) circulation in its field . . . and leads in advertising volume.

ABC ABP

KEENEY PUBLISHING CO.

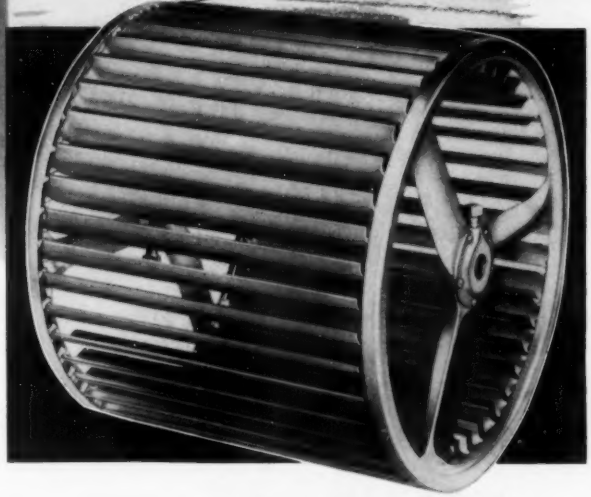
6 N. Michigan, Chicago 2

Heat-Well
Forced Air
Gas Furnace.

FOR

All types

OF WEATHER

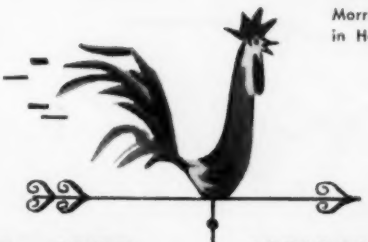


Morrison Blower used
in Heat-Well Furnaces.

In building America's First All-Assembled Welded Furnace, the Heat-Well Manufacturing Co. has taken great care to see that each assembly and individual part is finely engineered, with the objective of rendering the maximum reliability, long life, low owning cost and economical operation.

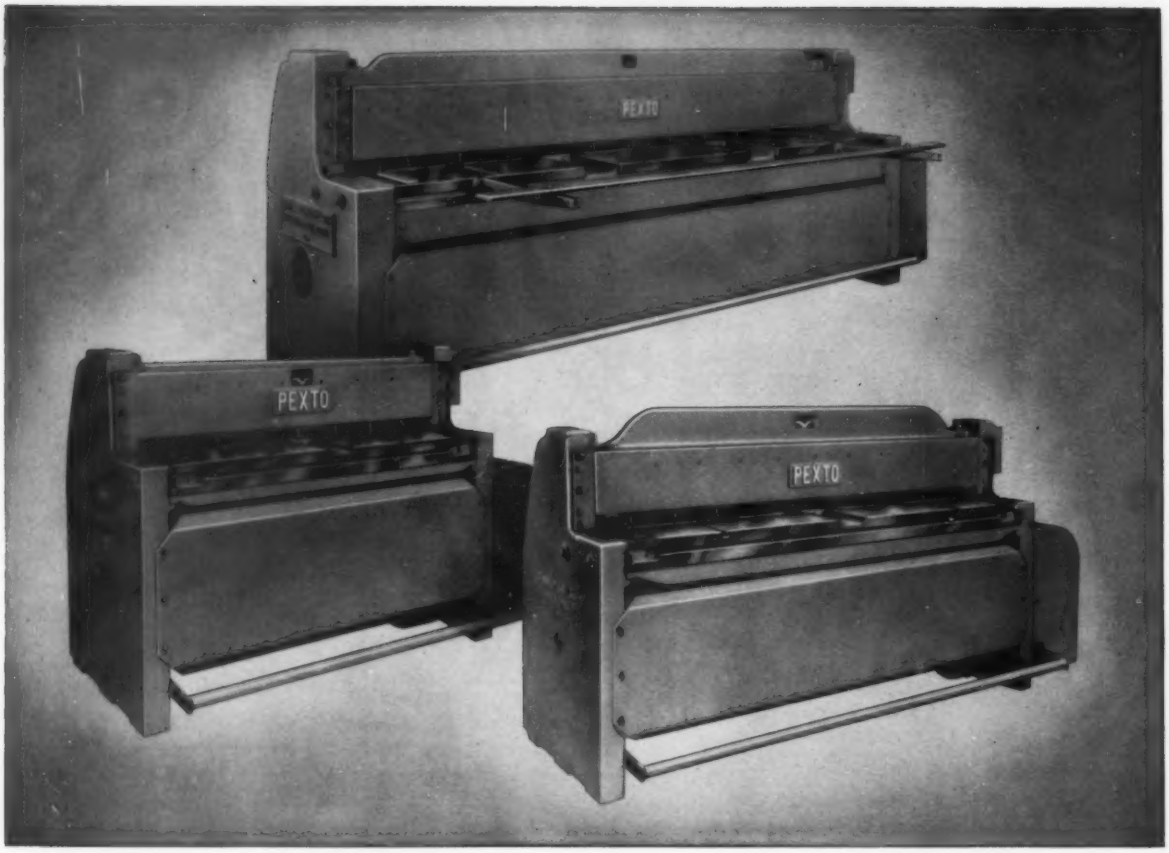
With this policy, plus the thorough flame, fan and limits control tests, it is little wonder that their forced air gas furnaces rank so high.

"FOR ALL TYPES OF WEATHER" — it has been Morrison's pleasure to work with original equipment manufacturers in building products for the distribution of conditioned air for the greatest comfort and well being.



MORRISON PRODUCTS INC.

16816 WATERLOO RD.
CLEVELAND 10, OHIO



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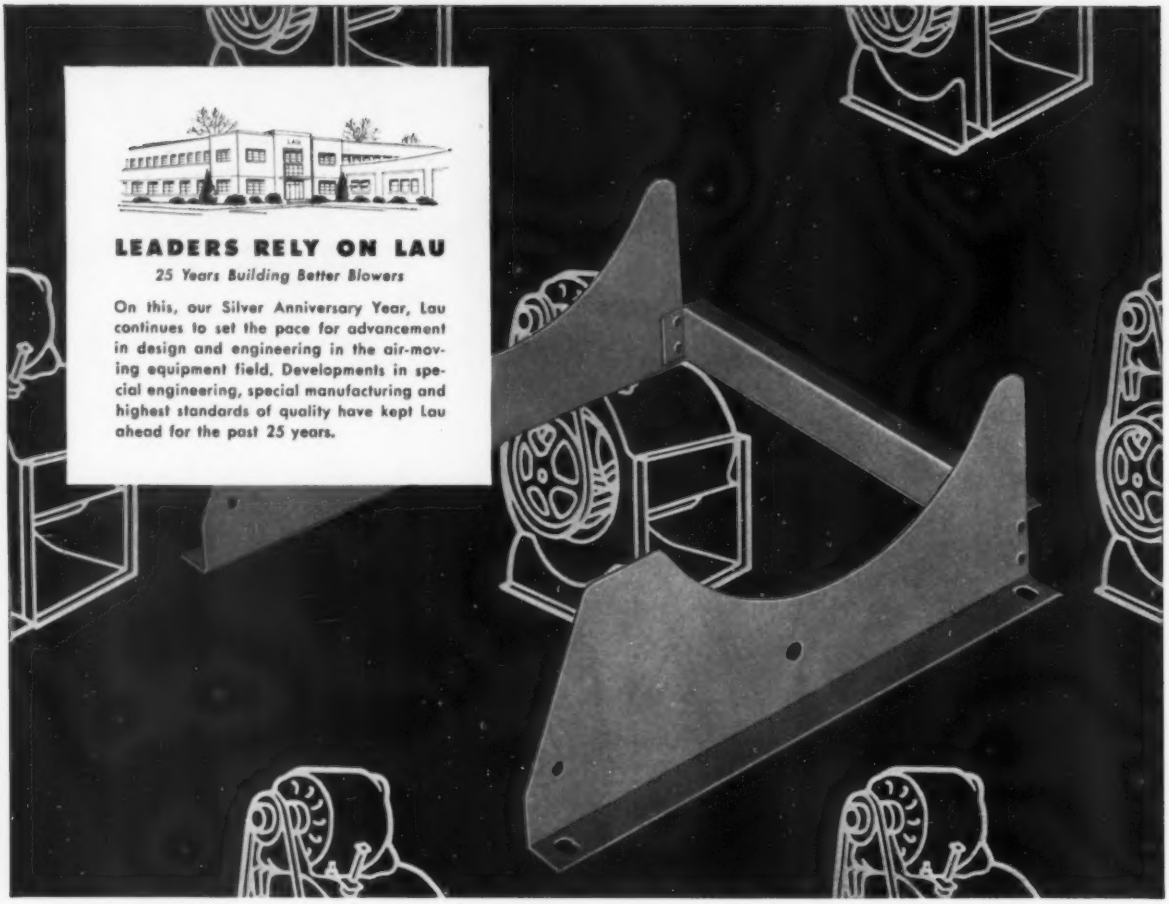

LEADERS RELY ON LAU

25 Years Building Better Blowers

On this, our Silver Anniversary Year, Lau continues to set the pace for advancement in design and engineering in the air-moving equipment field. Developments in special engineering, special manufacturing and highest standards of quality have kept Lau ahead for the past 25 years.

MASS HOUSING SUPPORT

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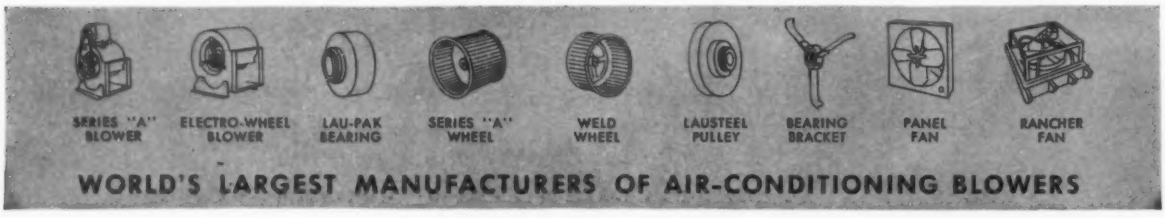
Other plants at Kitchener, Ont., Canada, and Azusa, California

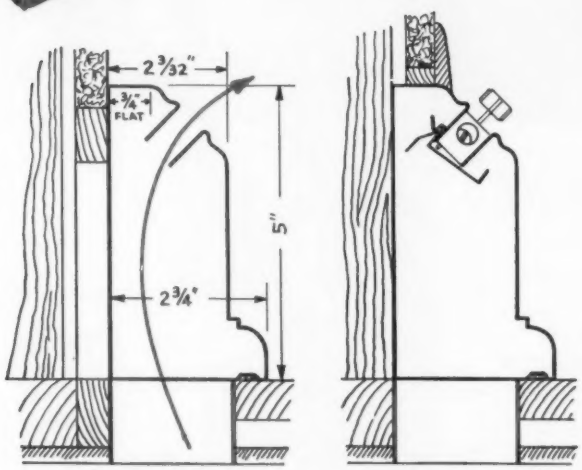
This exclusive Lau-designed housing support has set the pattern for the blower industry. It has extreme structural rigidity, of heavy 8 to 12 gauge steel (depending on blower size), is cross-braced where required, and supports the entire blower assembly with strength in every part. You'll find our housing support applicable to *all* angles of discharge (standard and special), without adjustments or changes. There is no impedence to air flow. Provision has been made for rubber mounting grommets where needed. Get next to Lau for blowers and blower parts to meet your specific requirements. Write today for name of salesman in your area.

LB-6, 56



Profit with SUPERIOR QUALITY!

KRITZER AIR BASE
WARM AIR BASEBOARD



FLUSH MOUNTING RECESSED MOUNTING

MODERN STYLING adds clean line beauty to any home or office. It eliminates out-of-date grilles, registers and radiators. Larger floor space offered means greater living space and more efficient furniture arrangement.

BUILT TO LAST—KRITZER Air Base is made of heavy gauge steel for a lifetime of use. It will stand the knocks and bumps of everyday home life without looking "beat up." Finished in rust resistant, baked-on gray enamel, it can be painted to match or harmonize with room decor.

EASY INSTALLATION—Boot opening can be cut any place in unit. Front plate snaps on. Air Base can be installed before or after plastering. Also easily adapted to old heating systems for home improvement. "Add-on" features make a full perimeter heating installation feasible in any room.

HIGHLY EFFICIENT PERFORMANCE—Air flow pattern provides a warm air blanket for true comfort. Proper placement will eliminate chilly drafts from windows or cold outside walls and will prevent dust streaking of walls. Cooled air is distributed with equal efficiency.

COMBINATION DAMPER—Control can be adjusted easily to limit opening of shut-off damper to simplify balancing of air distribution.

Write for BULLETIN 701

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PARTNER for PROFITS

MODEL 150 F with Universal Flange Mount.
Capacity: 0.65 to 1.50 G.P.H.

Flange mount this all-new U.S.-CARLIN Burner to the heating unit of your choice

U.S.-CARLIN's new Model 150 series Oil Burners are designed especially for flange mounting to any furnace, boiler, or water heater with minimum tube opening of 4¼" diameter. This compact, modern addition to the popular U.S.-Carlin line offers many outstanding features . . . highest efficiency . . . quiet, economical operation . . . compact design . . . easy, fast installation and servicing . . . opening for you a vast new field in the popular-priced home market.

Available with Carlin Head or High Temperature Combustion Head (Shell Head), these U.S.-Carlin flange mounted burners are designed and engineered as your PARTNER FOR PROFITS.

For more facts and figures on the new 150 series, contact your U.S.-Carlin Wholesaler, or write . . .

They Outsell Because They Excel

US OIL BURNERS

YOUR WISE CHOICE: For the best, combine your furnace, boiler, or water heater with a modern, compact U.S.-Carlin 150 series burner.

RESULT: A combination that can't be beat . . . performance-wise . . . sales-wise . . . and profit-wise.

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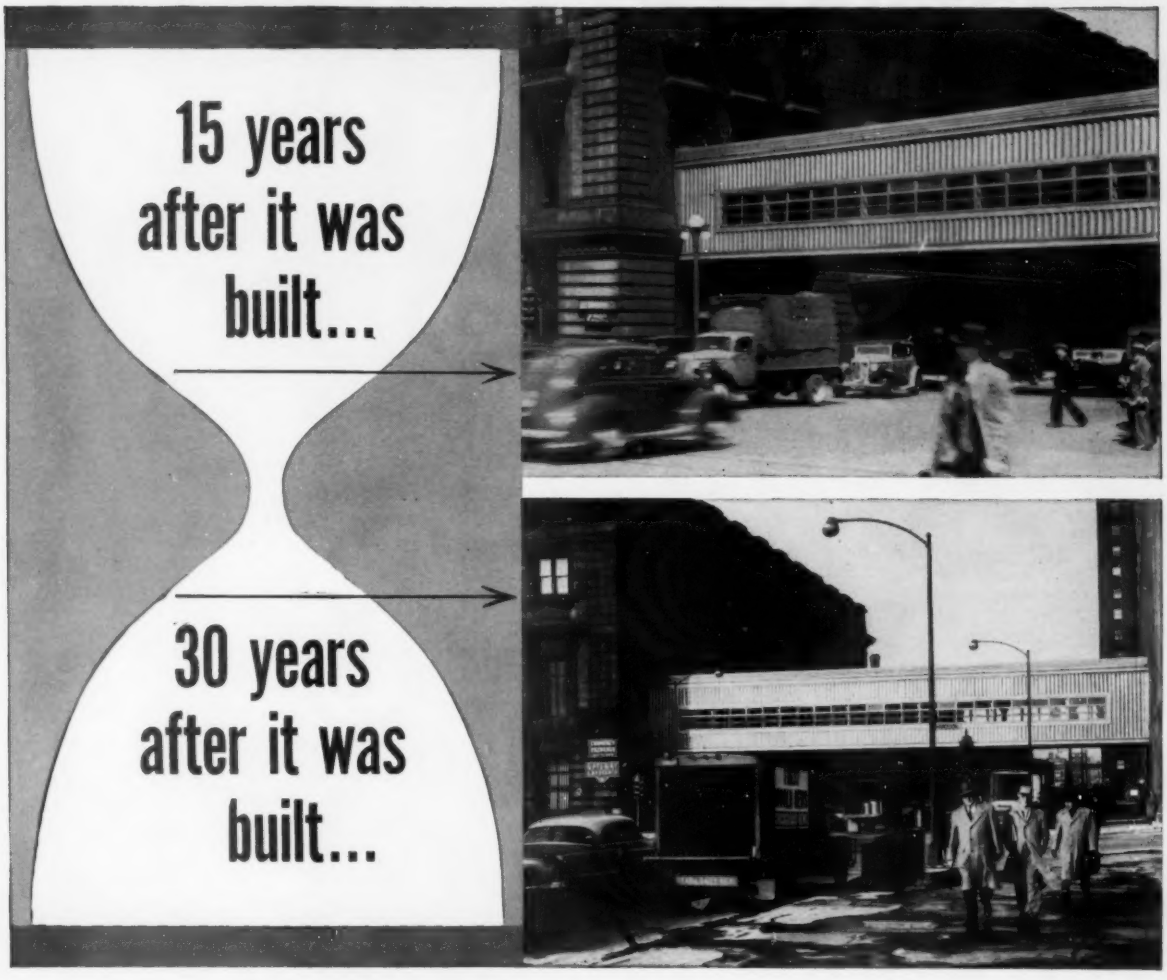

This STAINLESS "Covered Bridge" is *EVER-NEW*

"INFO" for Architects and Builders

1. "AL Structural Stainless Steels"—12 pages on stainless grades, properties, forms, finishes, standard "specs," uses and advantages.
2. "Stainless Steels for Store Fronts and Building Entrances"—40 pages of valuable data on examples and details. AIA File No. 26D.
3. "Stainless Steel Curtain Walls"—A 24-page progress report on methods. AIA File No. 15-H-1.

Write for Details

Address Dept. AA-80

The top photograph of the AL Stainless Steel-surfaced concourse that connects the Chicago Daily News building with the North Western station was taken about 1939-40. The lower picture was made early in 1955. There's no discernible change.

Another 30 years—50 years—100 . . . the bridge's stainless shell will still be just as good as new. No one knows *how long* AL Stainless actually will last, but it could be for centuries, if required. And all the time it requires no particular maintenance, no painting or refinishing—just occasional washing to remove the grime that isn't carried away naturally by wind and rain.

No other architectural metal can match stainless steel in these properties. Not one can last as long, cost as little to maintain, and prove as economical in the long run. • Use AL Stainless in *your* projects, for maximum service and lasting beauty, both in exteriors and interiors. Ask us for any help you need. ***Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22, Pa.***

WAD 5654

For Stainless Steel in ALL Forms—call

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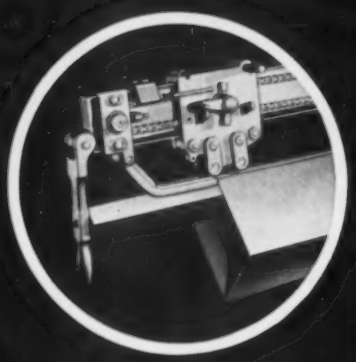
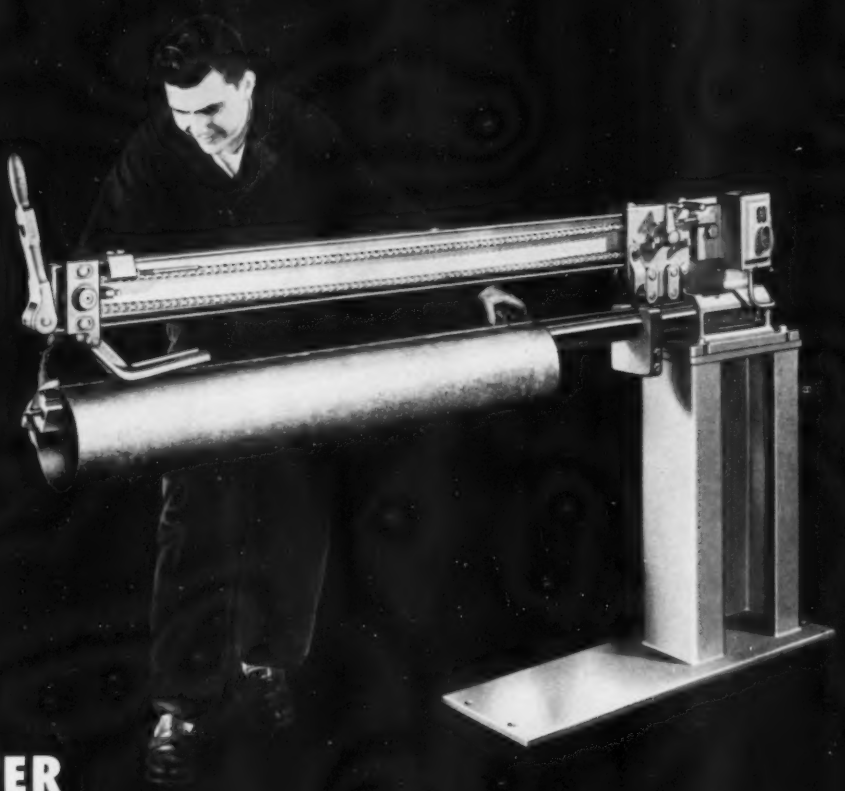
built for speed and operating ease





NIAGARA UNIVERSAL POWER GROOVER

FOR CLOSING SINGLE AND PITTSBURGH LOCK SEAMS

Up-to-the-minute in design, the Niagara Model 48-U Universal Power Grooving Machine is a fast, smooth-operating producer. Its multi-purpose horn (furnished as standard equipment) is easily rotated and locked in any one of several positions for closing single lock seams on inside or outside of square and round work or Pittsburgh lock seams on square work.

Driven by a direct-connected gearhead motor, the machine requires less horsepower — hence, *lower operating cost, no belts, no space consuming guards!* Convenient controls speed production. Not only can more jobs be done in less time with less effort — but consistently accurate work is assured.

Of rugged fabricated steel construction, this versatile groover features the lowest outline and most compact, space-saving design obtainable. Working length is 48". Single lock seaming capacity is 20 gage mild steel. Pittsburgh lock seaming capacity is 18 gage mild steel. In every detail, it's designed to save time, work, space and money.

SEE WHAT THIS MACHINE CAN DO FOR YOU

by writing for new, illustrated Bulletin 76 which also describes other Niagara power and hand grooving machines.

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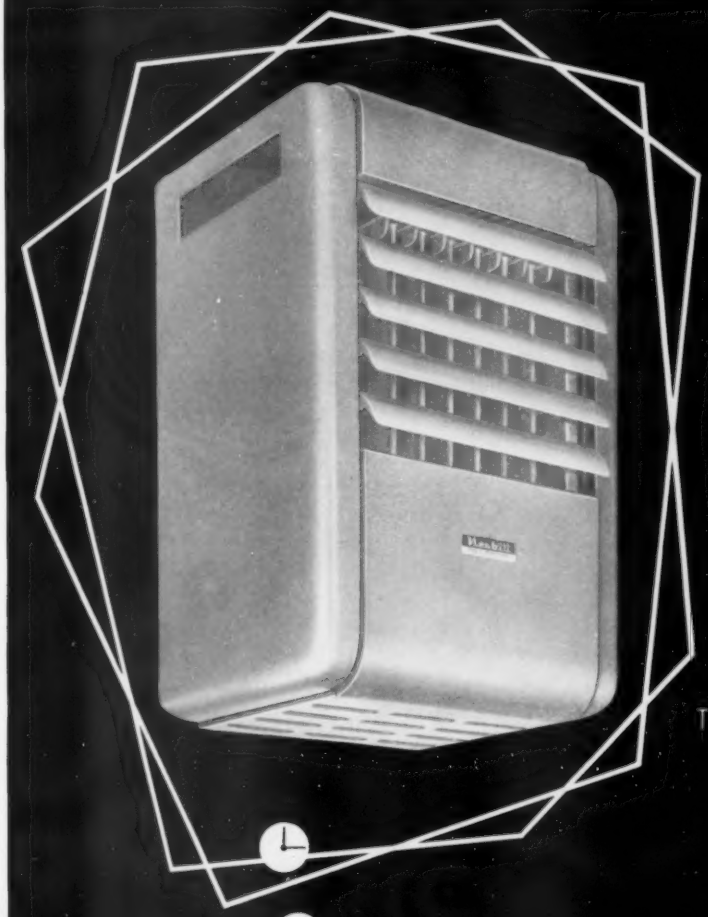

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Added to all the other good reasons for choosing Nesbitt Gas-Fired Unit Heaters is this one: IMMEDIATE DELIVERY. The Nesbitt plan of production commits us to maintaining ready stocks of all sizes right through the PEAK SELLING SEASON. This means that you can order any size Nesbitt Gas-Fired Unit Heater for any type of gas or gas-air mixture RIGHT NOW or at ANY TIME during the heating season and expect it to move IMMEDIATELY direct to your job.

Seven sizes: 400 to 2900 cfm; 25,000 to 200,000 Btu/hr input. For all gases and gas-air mixtures. Beauty, comfort, structural quality, space-saving installation and service economies make Nesbitt your best choice. Send for Publication 280 today. John J. Nesbitt, Inc. Philadelphia 36, Pa.

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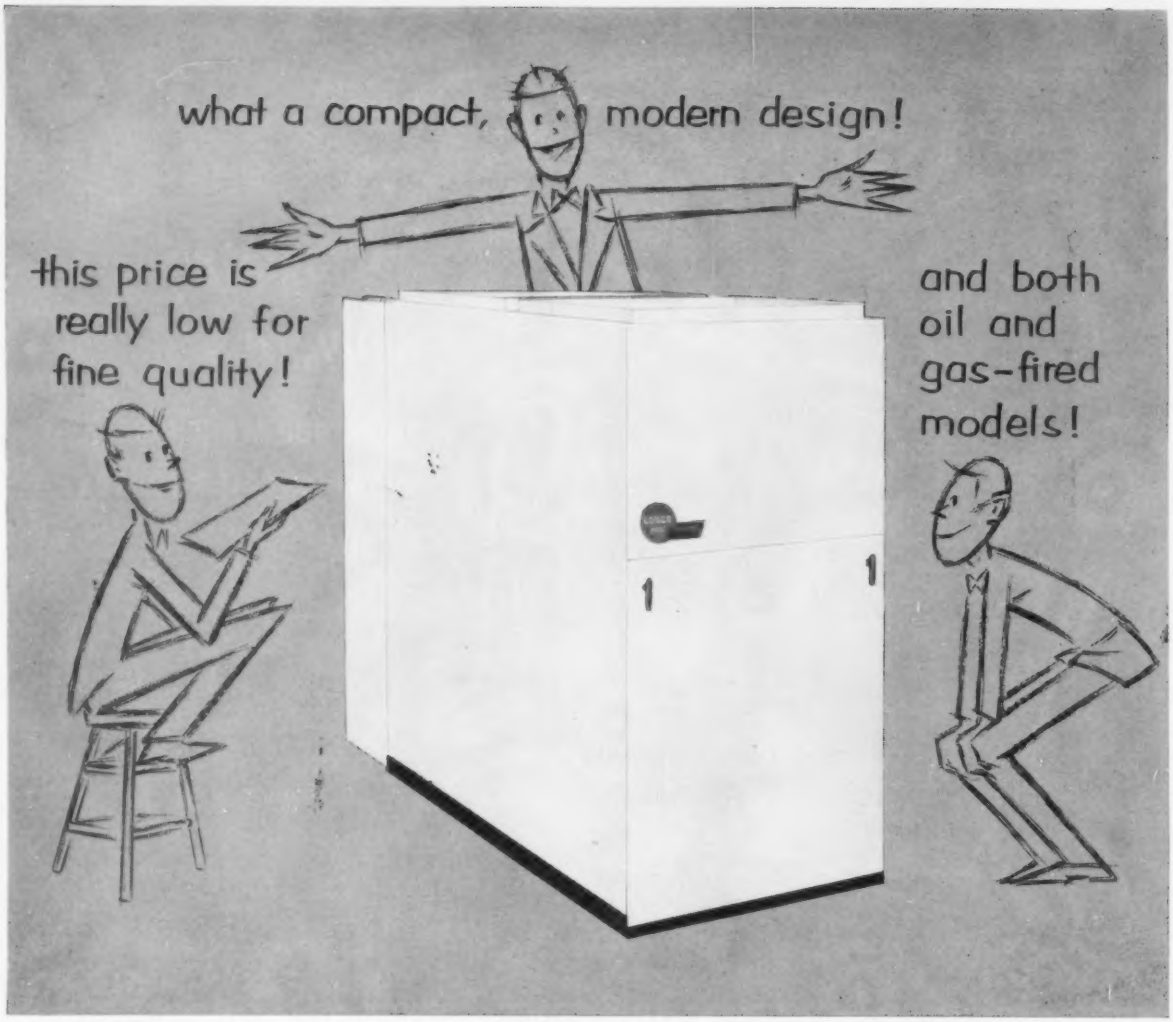
Approved by AGA and Canadian Standards Assn; listed by Underwriters Laboratories; sold through wholesalers



new feature-packed CONCO Low Boy Furnaces

BOTH OIL AND GAS-FIRED MODELS

These new low-boys, designed for new and replacement installations in popular sized homes, are an important addition to the complete Conco line of white, streamlined counterflows, hi-boys and low hi-boys. The compact, attractive cabinets are kept cool and quiet by glass fiber insulation. Finishes are baked enamel, Bonderized for permanent, rust-free, easy-to-clean beauty. The heavy gauge steel heat exchangers are single piece, all-welded construction designed for long life, maximum heat transfer. Blowers are over-sized and resiliently mounted for slow-speed, quiet operation. Other low boys, in the Town & Country line, are available for larger homes. For detailed information and specifications write for spec sheets No. 950 (gas) and 940 (oil).

...and look what's new in CONCO AIR CONDITIONING

Conco YEAR-'ROUND air conditioners are available to meet any installation requirement — oil or gas fired heating, air or water cooled refrigeration. Conco summer air conditioners are also available for addition to existing heating systems. Write for spec sheets.

CONCO ENGINEERING WORKS

Division of H. D. Conkey & Company, Mendota, Illinois

Manufacturers of a complete line of quality heating and air conditioning equipment

AFFILIATES: CONCO BUILDING PRODUCTS, INC. - BRICK, TILE, STONE
CONCO MATERIAL HANDLING DIV. - CRANES, HOISTS

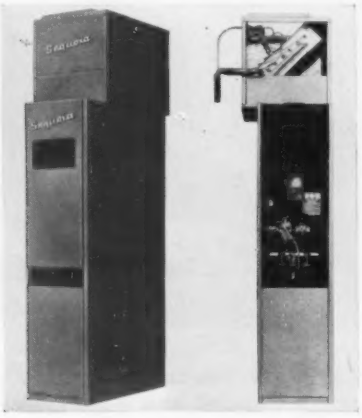
CONCO Heating Cooling

EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For additional product information which is available, see this month's New Literature department

Add-On Cooling Units

MODEL ACR remote air cooled units in 2, 3 and 5 ton models designed for add-on use with gas-fired furnace line — *Sequoia Mfg. Co., Dept. AA,* 1000 *Brittan Ave., San Carlos, Calif.* Units are designed for combination use with highboy, counterflow and horizontal furnaces. Operating capacities for 2 ton



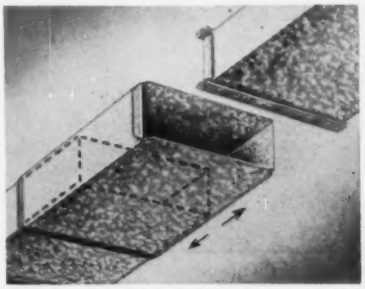
model are 24,000 Btu; for 3 ton unit, 36,000 Btu; and 58,800 Btu for 5 ton model. Twin fan compressor operates on 230-v, single phase current; overload protection is provided. Featured, according to the company, are large receiver capacity and use of expansion valve in the refrigerant line.

Exhaust Fans

SERIES 300 "Axiflo" fans with airfoil type blading, designed for air exhaust or process air supply — *Westinghouse Electric Corp., Sturtevant Div., Dept. AA*-143, 200 *Readville St., Hyde Park, Boston* 30. Guide vanes, inlet and outlet cones, wheel caps and belt guards have been streamlined to minimize turbulence. Featured is non-overloading horsepower characteristic. Fans are in three drive arrangements: external V-belt, direct with motor inside casing, and direct with motor outside inlet opening. Fourteen sizes have volumes ranging from 1700 to 100,000 cfm, wheel diameters from 15 to 72 in. and static pressures up to 3¼ in.

Duct Connector Fitting

"ADJUSTA-DUCT" telescopic connector fittings designed to speed installation of duct and fittings for warm air heating and cooling installations — *Duc-Pac Div., Swett Bros., Dept. AA,* 78 *Island Pond Rd., Springfield, Mass.* Adjustable sleeve type fitting is said to



eliminate cutting, notching and joining of fill-in sections of stack duct. Fill-in section is installed by telescoping the fitting to fill the opening. Internal and external "lip seal" flanges provide wiping action which permits tight connections, the company states.

Rotary Burner Transformer Brackets

UNIVERSAL MOUNTING brackets designed for use in conjunction with three transformers to fit rotary oil burners — *Service and Supply Co., Dept. AA,* 914

W. Wisconsin Ave., Appleton, Wis. Brackets are designed to reduce inventories of transformers and servicing problems of certain rotary type burners, according to the company.

Roof Deck Finish

ROOF DECK finish designed to resist construction abuse for "Milcor" roof deck — *Inland Steel Products Co., Dept. AA,* 4023 *W. Burnham St., Milwaukee* 1. Prime finish is baked-on epoxy-resin enamel over bonderized base, similar to finishes on refrigerators and washers. Primer resists scuffs and scrapes incurred during shipping, handling and construction; bonderizing prevents corrosion from spreading over surface if damage does

(*Continued on page* 128)

Ing Remen (center), Manager of the Pacific Division of Lennox, visits Goettl partners, Cecil Wood (left) and Bill Goettl (right).

"LENNOX® and top-caliber

says BILL GOETTL OF GOETTL BROS., INC.
THE LENNOX DEALER IN PHOENIX, ARIZONA

This spacious and well-lighted office makes it easy to keep vital business facts at finger-tip.

"The quality of Lennox equipment, of course, is of primary consideration. But there's another reason for handling Lennox: it has tremendous public favor and acceptance. This has been accomplished not only by the superior performance of Lennox products, but by a *consistent* national advertising program. As a result, Lennox has obtained an exceptionally fine group of dealers throughout the country. And this association with 'top' dealers means a great deal to us."

MODERN METHODS HELP GOETTL BROS. GET BIG DOLLAR VOLUME

Draftsmen work in cooperation with builders, architects and home owners in planning installations.

2-way radio dispatch system permits constant contact with company's field men—in 40 trucks and cars.

A customer's emergency call is relayed to the nearest available car for "lightning-fast" service.

has public acceptance... dealers everywhere"

Another Dealer Tells Why He Switched to LENNOX AIR CONDITIONING AND HEATING

Goettl Bros. is one of the largest and most progressive heating and air conditioning dealers in the United States. Their new building, with 30,000 sq. ft., features a "showroom in the sky"... visible to passing traffic at all times. And Lennox units are also displayed on the street level. Another unusual facility is the completely equipped auditorium. When not in use by the firm, it is available to builders and other business groups without charge.

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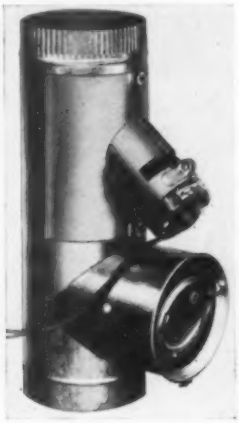
take place. Finish is applied after roof deck is formed, in a ten step process. Coating is available on "Milcor" steel roof deck types A, B, and C. Finish is said to provide hard base for alkyd, rubber, oil, varnish and vinyl paints.

Engine Driven Welder

MODELS 30AG AND 40AG engine driven welders in 300 and 400 amp models, respectively — *Welding Dept., General Electric Co., Dept. AA,* 1 *River Rd., Schenectady* 5, *N.Y.* Welders include reversing switches, battery start and side panels; two and four wheel trailers are available. Constant pressure brush springs require no adjustment; bearing on generator is sealed. Gasoline driven models have 54 hp engines rated at 2150 rpm. Both 300 and 400 amp models operate at maximum rpm of 2150. The 300 amp unit has welding range of 60 to 375 amp; 400 amp unit has operating range of 80 to 500 amp.

Draft Inducer-Regulator

"SHUR-FLO" combination draft inducer-regulator which is adaptable to oil, gas, stoker and hand-fired installations — *Walker Mfg. and Sales Corp., Dept. AA,* 1711-1717 *Penn St., St. Joseph* 1, *Mo.* Unit is said to cause draft immediately in flue or chimney



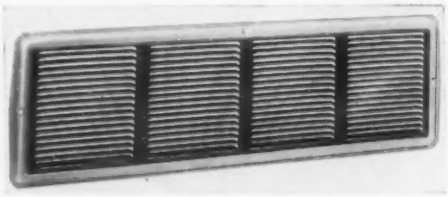
where natural draft is poor and to correct some troubles caused by poor chimney construction. Constructed of heavy gage galvanized steel, unit has heavy-duty fractional hp motor which is shielded from heat. Once draft has been established by inducer fan, regulator holds it at maximum combustion efficiency, according to the manufacturer.

Plastic Fume Hoods

PLASTIC FUME HOODS designed to provide resistance to corrosion by acids, salts, alkalies, alcohols, acetates, and hydrocarbons — *Haveg Industries, Inc., Dept. AA,* 900 *Greenbank Rd., Wilmington, Del.* Hoods are in a variety of standard and special sizes with fume ducts and exhaust systems made up of standard size duct and fittings, the company states. Dual intake housings, also of plastic, can be made an integral part of the overall exhaust system.

Return Air Grilles

MODELS 21-H (sidewall) and 23-H (baseboard) return air grilles for air conditioning systems — *Air Control Products, Inc., Dept. AA, Coopersville, Mich.* Fins



run horizontally, making it impossible for room occupants to see into ducts. Grilles are finished in two tone chameleon beige, are available in 24 × 6 in. and 30 × 6 in. sizes.

Vane Rails Packed in Coils

AIR TURNING vanes now packed in 100 ft coils to reduce waste and provide smaller package—*Duro-Dyne Corp., Dept. AA,* 800 *Third Ave., New Hyde Park, N. Y.* Designed for turning air in elbows, etc. when square ducts are used, turning vanes guide air around corners with minimum loss of efficiency, according to the manufacturer.

Water Heater Control

"UNITROL 110" automatic control for gas water heaters—*Robertshaw-Fulton Controls Co., Dept. AA, Youngwood, Pa.* Featured are 100 percent safety shutoff and magnet assembly, filter cartridge and valve assembly which are interchangeable with those of other controls. All connections are straight down and parallel.

Disposable Filters for Cooling Units

REDESIGNED AIR FILTER for central or window cooling units, designed to remove odors, gases, smog, smoke, pollen, dust, mold spores and bacteria from the air — *Barneby-Cheney Co., Pur Air Div., Dept. AA, Cassady at 8th Ave., Columbus* 19, *O.* Original "Dacor" (Disposable Activated Charcoal Odor Remover) has been improved by increasing adsorption rate for quicker purification of air, the company states. Effectiveness is partly due to elimination of the need for ventilation, according to the manufacturer, thereby keeping out some of the outside odors from the conditioned

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QUALITY DESIGN AND CONSTRUCTION that ensures customer satisfaction.
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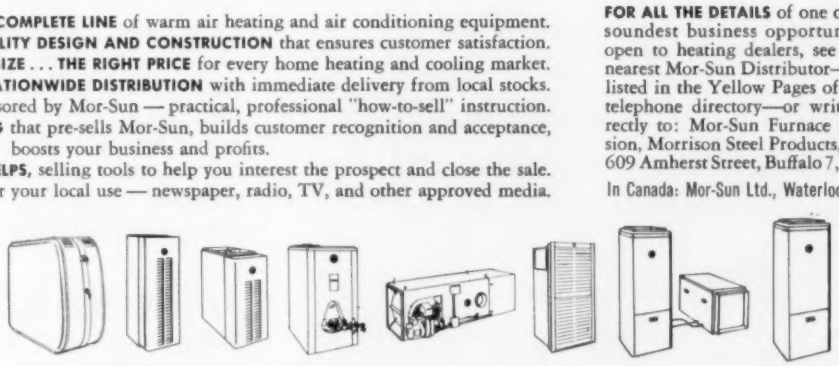
SALES PROMOTIONAL HELPS, selling tools to help you interest the prospect and close the sale.
CO-OP ADVERTISING PLAN for your local use — newspaper, radio, TV, and other approved media.

FOR ALL THE DETAILS of one of the soundest business opportunities open to heating dealers, see your nearest Mor-Sun Distributor—he's listed in the Yellow Pages of your telephone directory—or write directly to: Mor-Sun Furnace Division, Morrison Steel Products, Inc., 609 Amherst Street, Buffalo 7, N.Y.

In Canada: Mor-Sun Ltd., Waterloo, Ont.

THE COMPLETE LINE

MOR-SUN HEATING-AIR CONDITIONING



● *There's a Mor-Sun Warm Air Furnace and Air Conditioner for every home heating and cooling requirement... the right size... the right price... for new construction or modernization.*

Also manufacturers of Morrison Roly-Door Steel Sectional Overhead Doors and Morrison Service Bodies

Say "Goodbye" to Service Calls

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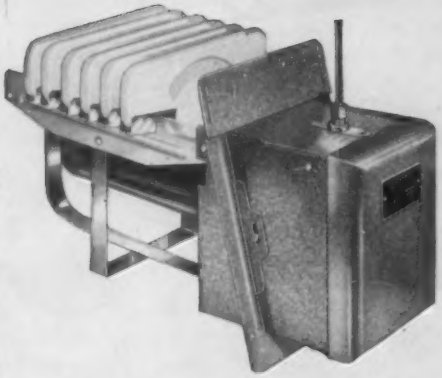
AUTOMATIC HUMIDIFIER



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☐ Auto-Flo "100" Automatic Humidifier

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equipment developments (Continued)

area and reducing the load on the cooling unit. Units are said to last a complete cooling season under ordinary use.

Highboy, Counterflow Furnaces

MODELS DF-2 (counterflow) and JF-2 (highboy) oil-fired furnaces for modern one-story homes — *Heil Co., Dept. AA, 3000 W. Montana St., Milwaukee* 1. Counterflow model is 68 × 25 × 28 in., has bonnet capacity of 112,000 Btuh, and is designed for use

with perimeter and floor panel heat distribution systems. Highboy unit for basement, alcove, utility room or closet delivers bonnet capacity of 112,000 Btuh, measures 68 × 25 × 28 in. also. Featured in both models are "Focused Flame" oil burners.

Baseboard Perimeter Diffuser

No. 46 "DIFFUSAIRE" baseboard diffuser for perimeter heating and cooling — *Hart & Cooley Mfg. Co., Dept. AA, 500 E. Eighth St., Holland, Mich.* Diffusers are in 4 ft lengths for individual or continuous strip installation; base projection is 2¾ in., height at back is 4½ in. Curved airfoil valve is mounted high on back wall; specially shaped front panel forms nozzle-like opening. Valve opening is placed at air discharge point. Bottom openings and sliding panels eliminate cutting; "Flexoflange" feature eliminates folding over of boot end, the company states. With boot end flush with floor and diffuser in place, expandable "Flexoflange" is inserted in opening and nailed through boot at the ends.

Vertical Cooling Tower

SERIES V vertical induced draft cooling tower designed for limited space applications — *Dover Mfg. Co., Dept. AA, 3117 Weatherford Ave., Independence, Mo.* Centrifugal blower is used for air flow within

Sell Carrier...the Unit Heater with a heart of Aluminized Steel!

SHOPS

GARAGES

WAREHOUSES

STORES

Why it pays you to sell Carrier Gas-Fired Unit Heaters:

1. You have a big PLUS to sell—a heat exchanger made of 16-gauge Aluminized Steel. Heavy gauge to start with, it will far outlast even heavier gauges of ordinary furnace steel and ceramic coated metals.

2. You have a DUAL market to sell—commercial as well as industrial. For the smart design of Carrier Gas-Fired Unit Heaters makes them as acceptable in stores and offices as in factories and warehouses.

3. You have a FULL range of sizes to sell—in both Duct Furnaces (7 sizes—70,000 to 230,000 Btu/hr) and in Unit Heaters (8 sizes—50,000 to 230,000 Btu/hr).

IT'S TIME TO CALL CARRIER!

Look for the name of your jobber-distributor in the Classified Telephone Directory. Or write Carrier Corporation, Syracuse, New York.

Carrier

industrial heating • air conditioning • refrigeration

The Modern Draft Control that's "QUICKER ON THE DRAW"

When it comes to moving around on the q.t. your shadow has nothing on Windmaster's large, square vane. Permanently quiet bearings of DuPont molded nylon give it a shadow-silent ride at every change of the draft . . . eliminating costly callbacks to hush up a creaky, squeaky draft control.

But permanent silence is only one of the big advantages of Windmaster's nylon bearing. It's non-rusting . . . won't wear out for the life of the unit . . . can't corrode . . . never needs oiling . . . because condensation and moisture actually help lubricate nylon.

Put These Windmaster Features To Work For You On Your Next Job

- 45° Vane—no nervousness —faster response.
- Non-Rusting Permanently Silent Nylon Bearings
- Calibrated Counterweight
- Large Square Vane—more effective area.
- Sloping Pipe Installations
- E-Z 'Dapter—quick, easy installation.

Consult Your WHOLESALER

Windmaster Draft Controls

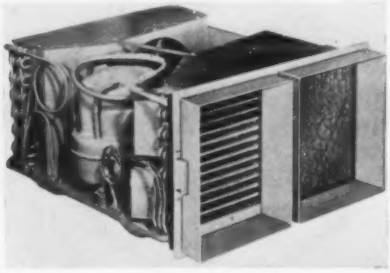
43 Vine St. **Columbus 15, Ohio**

equipment developments (*Continued*)

tower. Tower may be used for interior or exterior installations; air intake and outlet are on same side so unit can be placed against wall or adjacent to compressor. Features reported are counterflow design; "square solid" spray; Z-shaped fill and hot-dip galvanizing.

Summer Air Conditioners

"ADVANCE SERIES" of room cooling units and model QR-200 air cooled summer air conditioner designed for central cooling of small homes or zone cooling of larger residences — *Mitchell Mfg. Co., Div., Cory Corp., Dept. AA,* 2525 *Clybourn Ave., Chicago.* Room units, in ¾ hp, 115-v, and 1 hp, 230-v models have "power pack" chassis, 1450 rpm blower motor and



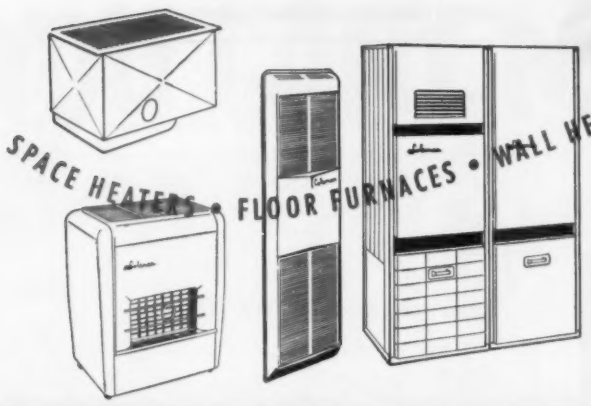
oversize wheel said to deliver 900 cfm and automatic thermostat. Units measure 22 3/16 × 24½ × 14¼ in. QR-200 air cooled series is said to cool an area up to 1000 sq ft. It operates on 230-v, single phase alternating current and has a power factor of 90 percent, the company states. Complete with flanges for connection to duct work, unit measures 16¼ × 31½ × 16¼ in., can be installed in window, through wall, or in attic, crawl space or basement. Two cylinder compressor is hermetically sealed; evaporator and condenser coils are copper tubing, fins are aluminum.

Soldering-Brazing Torch

"SUPER JIFFY" air-acetylene soldering and brazing torch with "all position" poppet valve in handle to give operator thumb-tip on-off control—*Modern Engineering Co., Dept.* 3 *AA,* 3415 *Pine Blvd., St. Louis* 3, *Mo.* Torch tips are in six sizes. Flame is approximately 4000 F, the company states. Halide leak detector and soldering copper are available with the unit.

Hanging Wall Unit Heaters

"COOL CABINET" hanging wall heaters for all types of gas—*Quaker Mfg. Co., Div. of Florence Stove Co., Dept. AA,* 1147 *Merchandise Mart, Chicago* 54. Designed to hang on wall like pictures to save floor space, units are in vented and unvented models. Fea-

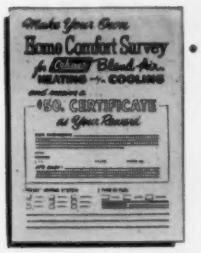


SPACE HEATERS • FLOOR FURNACES • WALL HEATERS • BLEND-AIR HEATING—COOLING

The only COMPLETE line in the industry . . . lets you sell all prospects, whether they're in the market for a space heater, floor furnace, wall heater or a complete Blend-Air heating-cooling installation. That's why . . .

MORE HOMES HEAT WITH COLEMAN than any other make! The best known name is the easiest to sell—be a Coleman dealer and put this powerful acceptance to work for you!

Exclusive Coleman sales program can Multiply PROFITS for You!



Sell the Modernization Market . . .

with this "Prospect Builder" promotion! Homeowner makes his own Home Comfort Survey and saves $50 on the installed price of his Blend-Air system. Tested by hundreds of dealers—PROVED by thousands in extra sales! Exclusively Coleman!

Build a BUILDER Market!

Help the builder sell his homes—and he'll be a customer of YOURS. Coleman's 1956 Home Builders Merchandising Program is the newest and most complete in the industry. Hundreds of builders have already responded to this powerful sales helps program. Offer it to YOUR builders—it helps get the builder business!

Turn Customers Into Salesmen

with this "use - the - user" campaign—proved by hundreds of dealers as one of Coleman's most profitable promotions.

FREE! SALES HELPS BOOKS

that can make you the biggest heating-cooling dealer in town! 116 pages packed with promotion plans, direct mail and hand-out pieces, available displays, signs, co-op newspaper ads, radio scripts, television and movie films.

COLEMAN SINCE 1900
—makers of lamps, lanterns, camp stoves, home heating and air conditioning

COLEMAN Vit-Rock® water heater...

with the EXCLUSIVE rock lining that can't rust. Backed by $500 10-year warranty bond—the strongest guarantee in the industry!

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MAIL COUPON TODAY for complete information!

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Extra-Profits
in your
pocket
with
"engineer-approved"

ELGEN All-Tite
VANE RUNNERS
NOW IN COILS!

THE EASIEST AND QUICKEST WAY EVER DEVISED
for installing single or double blade turning vanes in square elbows. No special tools required.

New production machinery of our own exclusive design, now enables us to produce button type Elgen All-Tite vane runners in continuous coils, effecting a savings in your cost per job.

COILED ELGEN ALL-TITE VANE RUNNERS MEANS . . .

- Less Waste! Waste pieces due to short ends are a thing of the past. Vane runner metal is coiled in 100 foot lengths, you just pull out the exact footage needed.
- Easier Storage! Each coil weighs approximately 50 lbs. and is packed in a box 28" x 28" x 5". Box fits easily under bench or against wall.
- Easier Handling! No loose pieces lying around to get in the way or collect dirt.
- Unrolls absolutely flat! Vane runner metal emerges from the box at bench height . . . absolutely flat . . . ready for use.

TWO MORE ENGINEER-APPROVED ELGEN PRODUCTS THAT SAVE YOU TIME AND MONEY

ELGEN SILENT DUCT
. . . for forming "flexible" duct connectors. A one piece metal to material unit, packed in coils, unrolls absolutely flat. Makes on the spot work a cinch.

ELGEN DAMPERSET
. . . for multi-blade dampers, parallel or opposed. Most perfect damper hardware developed.

ELGEN PRODUCTS ARE SOLD THROUGH LEADING JOBBERS EVERYWHERE.

Write today for free catalog and "spec" sheets!

ELGEN MANUFACTURING CORP.
41-34 39th Street, Long Island City 4, N. Y.

equipment developments (Continued)

tured are cool exterior cabinet suitable for painting to match decor; no open flame; porcelain heating unit; cast iron, "deep port" burner; wall plate for attaching to wall. Units are in capacities of 25,000 and 40,000 Btu input, measure 60 in. high, 26 in. wide, 7 in. deep.

Furnace Return Air Drop

RETURN AIR drop designed to fit right or left sides of G6, 102 series furnaces —*Armstrong Furnace Co., Dept. AA, 851 W. Third Ave., Columbus 8, O.* Blue-

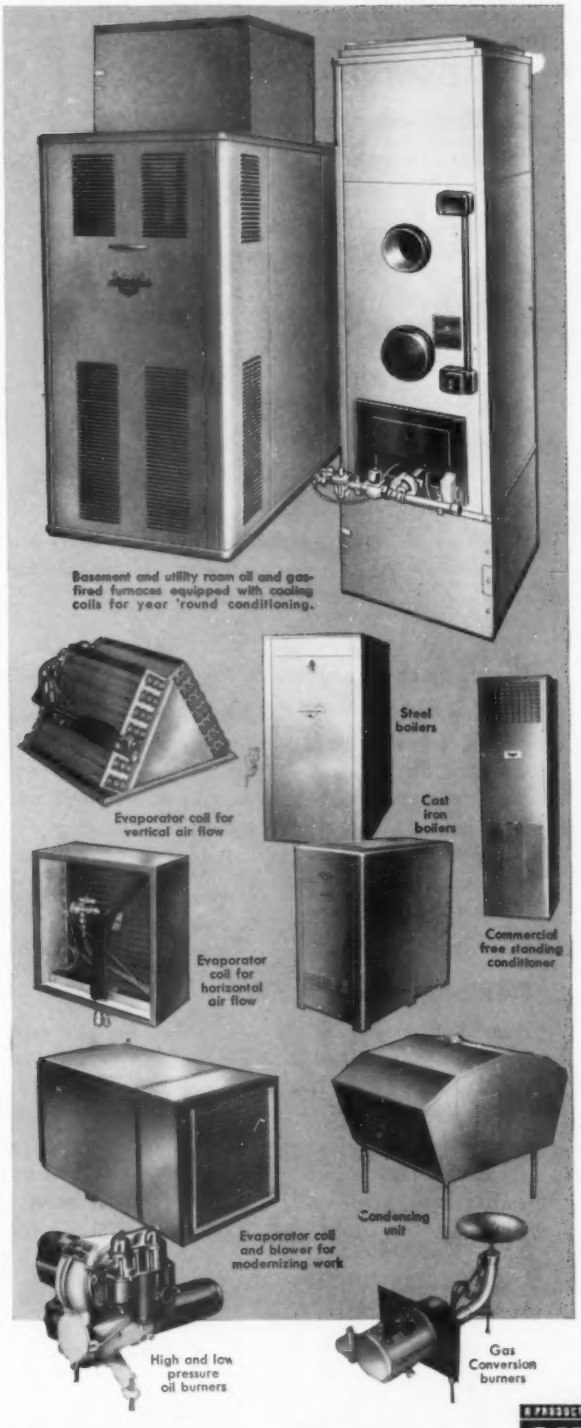
baked enamel finished drop is rust resistant, is designed to eliminate necessity of making a sheet metal drop to the bottom of the furnace when furnace is installed in basement.

Plastic Deck Cooling Towers

WET DECK cooling towers with plastic cooling decks — *Tedco Cooling Towers, Div., Engineering & Development Co., Inc., Dept. AA, 2406 S. 7th Blvd., St.*

Louis, Mo. Die-cut, notched and fitted decks are designed to withstand severe condensation and temperature change conditions, are said to suspend large quantity of water on surface (due to millions of tiny cell

YOU CAN'T MISS A SALE


Basement and utility room oil and gas-fired furnaces equipped with cooling coils for year 'round conditioning.
Steel boilers
Cast iron boilers
Evaporator coil for vertical air flow
Commercial free standing conditioner
Evaporator coil for horizontal air flow
Condensing unit
Evaporator coil and blower for modernizing work
High and low pressure oil burners
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...because WINKLER offers you everything to sell

and shows you how to sell it!

If you hold a Winkler Direct Factory Franchise, you'll have no "off" seasons—no sales lost because of an inadequate line. You're solidly in business, with every facility for making every month of the year a profitable one. *There is no new or old home comfort requirement which can't be better satisfied with Winkler equipment.*

Dealers the country over are switching to Winkler... for these reasons:

1. The most complete line ever seen of heating and cooling equipment, both for new building and modernization.
2. Soundly engineered products, featuring advanced designs for economical, dependable performance ...built by an organization nationally famous for quality manufacturing.
3. A full selection of sales tools for uncovering prospects, making product demonstrations and closing the sale.
4. A free Sales and Engineering Training Program which turns ordinary salesmen into stars...takes all the mystery out of air conditioning.

Why delay! A letter today will bring you full information on the Winkler Direct Factory Franchise and how it can be the foundation of a more successful business.

At the Winkler Training Institute, an instructor shows trainees how to solve air conditioning problems by new, simplified methods.

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STEWART-WARNER CORPORATION

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IN CAPACITIES FROM 2 to 50 TONS

THE LARKIN WATER SAVER IS A MONEY SAVER!

All along the line the LARKIN Water Saver Cooling Tower is a money saver for you and your customers:

1 Low initial cost permits you to make lower bids—saves your customers money.
2 Highly efficient—a bonus amount of wetted surface assures conservative ratings. This means lower head pressures, less current loss and smoother performance.
3 Easily serviced—bolted construction. Unit is easily dismantled in the field—all the way down to the sump.

The LARKIN Water Saver can be a money maker for you on every air conditioning installation.

FAVORED FEATURES

- Wetted surfaces of all-heart redwood.
- 16-gauge steel panels mastic-coated on inside, finished with epon base, zinc-chromated primer and two coats of baked-on enamel outside.
- All models equipped with hot-dip galvanized propeller fans. Centrifugal blower optional on all models through 20 tons.
- Gravity-type distribution basin—low pumping head over tower.

Write for free literature, price list and capacity data. No obligation. Or see your wholesaler.

LARKIN COILS INC.

519 Memorial Drive, S.E. • MUrray 8-3171
P. O. Box 1699, ATLANTA, GEORGIA

equipment developments

(Continued)

cavities) without absorbing water or becoming soaked. Decks are also said not to rot, sustain mold or fungus, crack due to aging, seasoning or freezing, or erode due to action of the water. Units are in 2, 5, and 7½ ton models, the manufacturer states.

Combustion Chamber

"JET-LINE" combustion chamber in 15 sizes from 0.60 gph to 12.0 gph — *Grant Wilson, Inc., Dept. AA-*

*VF*18, 141 *W. Jackson Blvd., Chicago* 4. Units are in pear or round shapes; refractory is pre-cast for added impact resistance, the company states.

Heat Exchanger

"EXPAND-O-MATIC" heat exchanger designed for industrial furnaces — *Armstrong Furnace Co., Dept. AA,* 851 *W. Third Ave., Columbus* 8, *O.* Heat exchangers are said to expand equally in all directions, to minimize noise and distribute expansion strain evenly in all directions. All industrial model furnaces manufactured by the company will include these heat exchangers.

Flexible Duct Connector

"ECON-O-FAB JUNIOR" pre-assembled flexible duct connector made of fabric double lock seamed to prime metal on each side — *Duro-Dyne Corp., Dept. AA,* 800 *Third Ave., New Hyde Park, L.I., N.Y.* Connectors are smaller than previous models. Two inch strips of metal overlap in back of 1 ¾ in. fabric strip. Metal is 28 ga galvanized steel; fabrics are asbestos or canvas. Connectors are packed in 50 ft and 100 ft rolls.

Floor Furnace

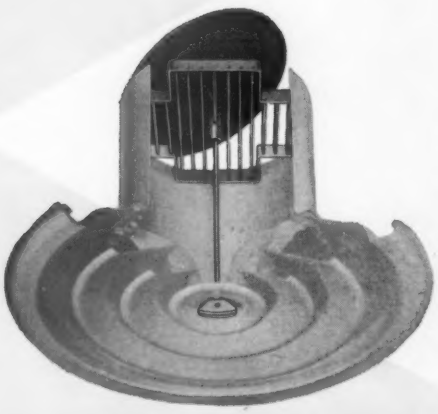
"CONTINENTAL" LOWBOY furnaces in five sizes for natural, manufactured, mixed or LP gases — *Ohio Foundry & Mfg. Co., Dept. AA, Penn R.R. & Slack St., Steubenville, O.* Units are in 20,000, 30,000, 35,000, 50,000 and 65,000 Btu capacities. Short legs hold unit off floor for circulation. Radiation surfaces

No.6 TFD Volume Control Damper

NEW simplified, adjustable damper for use with AEROFUSE Ceiling Diffusers

Easy to install!

Quiet, positive operation!



The No. 6 TFD Volume Control Damper is designed for use with Tuttle & Bailey AEROFUSE Ceiling Diffusers where short coupled connections are required. Unit consists of a single blade damper hinged to an adjustable bar grid. Damper setting is regulated through the face of the diffuser by means of an operator handle and rod which may be held permanently in place by means of a set screw or used as a removable key. For extremely short necks, unit is available with a double grid.

Write for BULLETIN NO. 112 . . . complete information, installation details, and list prices

TUTTLE & BAILEY

division of Allied Thermal Corp. New Britain, Connecticut

UP TO 30% LESS FLOOR SPACE
. . . same B.T.U. Input!

NOW Save on Price
Save on Space
with the new line of
HEATWAVE
GAS-FIRED
FURNACES

A triumph in furnace engineering!

More compact! Designed to fit almost anywhere without reduction in heating surface of combustion chamber!

New styling, too! Smart two-tone baked enamel finish.

And once installed, all internal parts are removable through front-access panels. No need ever to remove the outside casing from closet or utility room installation. Tuck it away and forget it!

Definitely superior new features. Costs less money. Gives more value.

Fully factory pre-fired and tested. Needs only usual duct, gas and electrical connections.

HEATWAVE

WRITE, WIRE OR PHONE FOR DETAILS

SOUTHWEST MANUFACTURING CO.
Subsidiary of the F. E. Myers & Bro. Co.
BOX 151 AURORA, MO.

equipment developments
(Continued)

are embossed to provide reinforcement, increase convection area and muffle expansion and contraction noises. Draft diverter is built into cabinet. Main burner is one-piece cast iron with raised ports; dial air shutter is said to provide accurate setting for correct mixing, then lock in place. Four larger models have knock-out panels at rear for converting furnace from gravity to forced air, the manufacturer states.

Blower-Filter Units

MODELS 10 AND 12 blower-filter units designed to convert gravity furnaces to forced air units — *Royal Products Co., Dept. AA, 1406 E. 4th St., Waterloo, Ia.* Units have 10 and 12

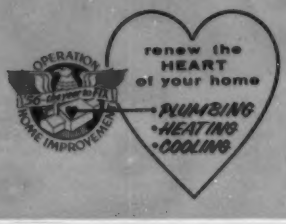
in. blower wheels, heavy steel bottoms which are designed to eliminate need for cementing, high motor mount for installation in damp basements, and large access door for changing filters. Standard size filters are used. Motor has adjustable variable speed drive.

Elevating Tail Gate

"WEIGHTLIFTER" elevating tail gate for pickup trucks — *H. S. Watson Co., Dept. AA, 1316 67th St., Emeryville 8, Calif.* Loaded from either side or back, unit has lifting capacity of 650 lb. Device is hand winch operated with completely automatic load brake constantly in operation to prevent droppage. Unit is especially designed for ½, ¾ and 1 ton pickup trucks. Gate platform ranges from 26

"I was installing these Field Controls before you were born, son"

No one knows better than a heating man's son what a problem service calls can be. So, this fact is important to him: Field Controls cut down service calls. Dad has known it for a score of years; more years will prove it to his son. On such quality products and quality workmanship are built the many father and son heating firms in the business today.



You have put your faith in **field** *more than 15,000,000 times*

FIELD CONTROL DIVISION of H. D. CONKEY & COMPANY, MENDOTA, ILLINOIS
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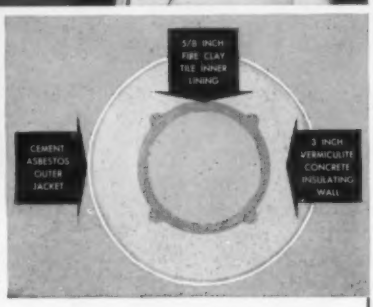


Glenn Nallinger of Apex Heating points out recent Van-Packer installation made by the company. Van-Packer vents the furnace, incinerator and water heater safely and efficiently. Close-up of Van-Packer flue cross-section (right) shows genuine masonry construction.

"We tried them all and chose the Van-Packer Chimney"

Howard Houchens,
Apex Heating Shop, Hammond, Ind.

"We install over 200 Van-Packer Chimneys a year and think they are the best packaged chimney on the market. The Van-Packer is completely safe even for high stack temperatures of incinerators." These are the words of Howard Houchens and Glenn Nallinger of Apex Heating Shop, leading Hammond, Indiana, heating contractors.

This safety is assured by permanent masonry of Van-Packer flue sections. Van-Packer *keeps* you in the profitable chimney business when incinerators rule out the use of most packaged chimneys. UL listed for all fuels, all home heating plants and incinerators; approved by major building codes.

Guaranteed greater draft of Van-Packer Chimney provides venting capacity for furnace, water heater *and incinerator*. In independent laboratory tests, the Van-Packer Packaged Masonry Chimney was proven to produce more draft than any other chimney or flue of the same size and height.

Immediately available from your local heating jobber, no job delays. Get the complete Van-Packer profit story. See "Chimneys — Prefabricated" in yellow pages of classified phone book, or write Van-Packer Corp. for Bulletin RS-1-11.

VP Van-Packer PACKAGED MASONRY Chimney

Van-Packer Corporation • Bettendorf, Iowa • Phone: DAvenport 5-2621

World's Largest Manufacturer of Chimneys

equipment developments
(Continued)

in. to 54 in. wide; winch can be located on either side of truck; 16 turns of crank raise load.

Evaporator Coil

MODEL "R3 Upflow" 2 and 3 ton evaporator coil used with air cooled condenser and installed on highboy furnace — *Armstrong Furnace Co.,*

Dept. AA, 851 W. Third Ave., Columbus 8, O. Redesigned unit has built-in plenum at top. Three knockouts are provided at top of unit for 6 in. duct runs from plenum chamber. An 18 × 12 in. plenum slot is outlined at corners.

Blind Rivet

"DAISY" HARD aluminum blind rivet with five cutting edges and hard aluminum sleeve with large or small washer flange — *Huck Mfg. Co., Dept. AA, 2480 Bellevue Ave., Detroit 7.* Assembled rivet is inserted into blind hold from driving side; tool pulls pin head through sleeve, splitting sleeve into five levers which spread and curl back against the blind side, pulling work together and bracing it.

Filter Odor Remover

"SUPER FILTER COAT" odor-removing adhesive for air filters—*Research Products Corp., Dept., AA, 1015 E. Washington Ave., Madison 10, Wis.* Adhesive is said to perform standard dirt and dust removing functions in

Midwest furnace manufacturer switches to faster, surer Bostitch stapling

Stapling cuts sheet metal assembly costs in half

Before the Bostitch Economy Man came along, this fabricator was riveting or crimping sheet metal seams. Now, with a Bostitch S13C Metal Stitcher he can fasten twice as many parts per hour, and seams are cleaner, smoother, more secure.

This rugged machine speedily and powerfully drives and clinches staples through two or three thicknesses of heavy sheet metal—for keeps. No pre-punching. No lining up of holes. No special operating experience is necessary.

Are you still using slower, costlier, more awkward fastening methods? Let a Bostitch Economy Man show how to save time and money on <u>your</u> fastening jobs.

Fasten it better and faster with

MAIL NOW

BOSTITCH®
STAPLERS AND STAPLES

BOSTITCH, 948 Mechanic Street, Westerly, R. I.

- ☐ Please have an Economy Man call on me.
- ☐ Please send me special information about fastening sheet metal.

We are presently using (please check)

☐ Riveting ☐ Crimping ☐ Spot Welding

Name _____

Company _____

Address _____

City _____ *Zone* _____ *State* _____

• Installs faster, easier

• Works better...costs less! And with a

MAID-O'-MIST HUMIDIFIER

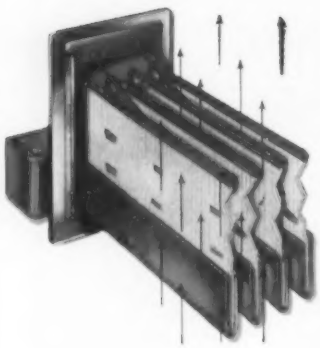
...You can FEEL the difference!

60% LESS AIR RESTRICTION IN PLENUM

50% LESS INSTALLATION TIME

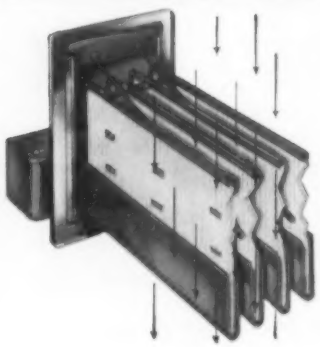
30% MORE EVAPORATION AREA

Convector humidifier engineered for BOTH conventional or counterflow warm air furnaces



What a wealth of performance —at such low cost! MAID-O'-MIST changes parched air to a correctly humidified climate for little money, little effort. Perfect for plenums of all modern warm air furnaces

For CONVENTIONAL Warm Air Furnaces
Installation is fast, easy. Cut opening in plenum and make water connections. No fitting or fastening to back of plenum. Unit is entirely supported by self-locking front plate.



For COUNTER FLOW Warm Air Furnaces
Because of its narrow trough design, MAID-O'-MIST can be installed on either side of counter flow furnaces having a minimum air passage of 3 inches.

NOTE THE INGENIOUS DESIGN!
⅜" copper water troughs are spaced an inch apart to allow fast, effective unrestricted air-flow between the evaporator pads. Here's 30% more evaporation area!

Get detailed information on these inexpensive units from your jobber or write directly to MAID-O'-MIST

MAID-O-MIST Inc.

MAID-O'-MIST, Inc.

3217 NORTH PULASKI ROAD · CHICAGO 41, ILL.

equipment developments
(Continued)

addition to actual removal of odors from the air streams circulating through the forced air furnace or cooling unit. Packaged in metal container, product is complete with sprayers for recoating after washing filters.

Remote Heat Pump

"HIDEAWAY" remote operated heat pump consisting of outdoor heating and cooling cycle and indoor air handling unit — *Westinghouse Electric*

Co., Air Conditioning Div., Dept. AA, Staunton, Va. Inside air handling unit is 34 × 33 × 22 in.; outside compressor-condenser unit is 38 × 26 × 29 in. Units are in 3 and 5 ton sizes; "four way valve" is designed for even heating-cooling changeover. Low voltage control is available, the company states.

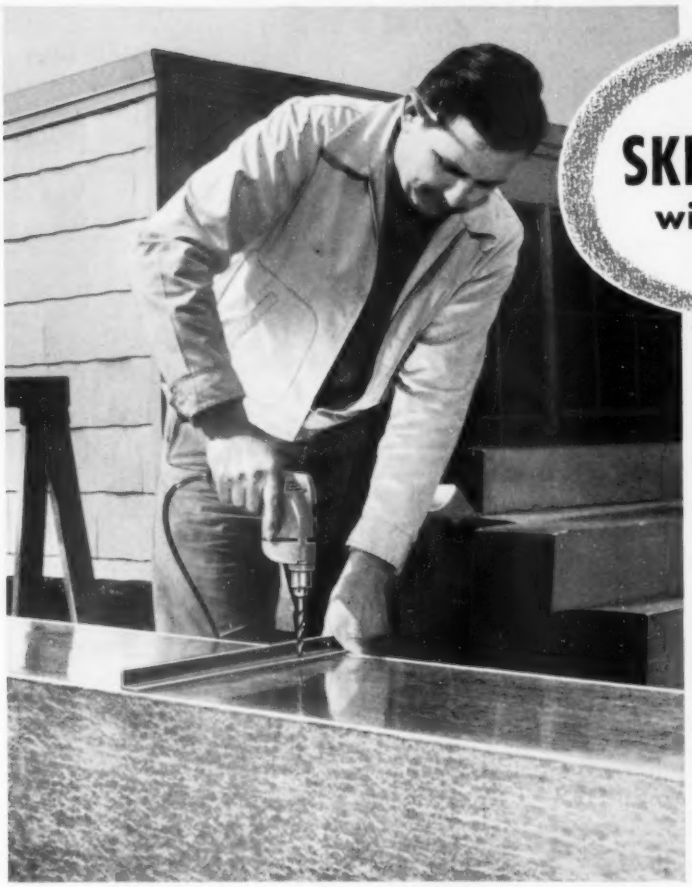
Welding Electrode

"EASYARC 328" welding electrode for all position welding of mild and low alloy steels — *Air Reduction Sales Co., Div. of Air Reduction Co., Dept. AA,* 150 *E. 42nd St., New York* 17. Electrode is low hydrogen type with iron powder added to coating for higher welding speeds. It is designed for welding hardenable steels, cold rolled steels, low alloy or mild steel when stress relieving is required, and weldments to be vitreous enameled after welding.

Electric Motors

"FRAME 566" series of motors designed to combine advantages of the high production and low cost fea-

Now! Up to 40% More Powerful Than Other Drills in its Price Range!



NEW SKIL ¼" DRILL VALUE

with amazing sure-grip dura-plastic finish!

Faster, easier drilling in maintenance, installation, and production!

Never before has such a low-priced drill offered so much power! Yet its light weight and new pistol-grip design make this SKIL Model 134 easier to handle! Speeds through tough, hard-to-reach drilling assignments . . . steps up operations, increases output on the job or in the shop.

New revolutionary *dura-plastic* finish gives sure grip, resists wear. Quality SKIL features assure long life under rugged use. Put the new SKIL Model 134 on your production team at the low price of only $34.50! See it, try it, at no cost or obligation!

SKIL Quality Drill Advantages!

- **New dura-plastic finish** for easier, more positive grip. Wear-resistant, won't chip!
- **Quality geared chuck** for fast, accurate bit changing!
- **Ball bearing spindle** for longer service, greater precision!
- **Comfortable pistol-grip handle** makes work easier, reduces fatigue!
- **Large inspection plate** for quick routine maintenance!

Model 134, ¼" Drill
At only $34.50

- **Standard speed—1800 r.p.m.**
- **Capacity in steel, ¼"; in wood, ½"**
- **New weight, only 3¼ lbs.**

FREE DEMONSTRATION AND FREE TRIAL!

See for yourself why the new SKIL Model 134 is the greatest drill value. Send coupon today!

SKIL
PORTABLE TOOLS

Made only by SKIL Corporation, formerly SKILSAW, Inc.
Factory branches in ALL leading cities

When you buy a Drill, be sure it's a SKIL!

SKIL Corporation, Dept. AA-86
5033 Elston Avenue, Chicago 30, Illinois
In Canada: 3601 Dundas St. West, Toronto 9

☐ I would like a demonstration and trial—FREE!
☐ Please send me illustrated literature on SKIL Model 134.

NAME_____
COMPANY_____
STREET_____
CITY_____ ZONE_____ STATE_____

add up all the

Skuttle FEATURES

and you'll sell more!

Model 450

Skuttle

UNIVERSAL HUMIDIFIER
WITH VAPOGLAS PLATES

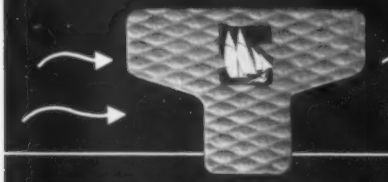
Only Skuttle is mounted outside heating plant casing. Easily installed. Saves time.

Up to 460 square in. evaporating area with Vapoglas plates. Means more efficiency.

Maintains lower pan temperatures. Less lime in water and less clog.

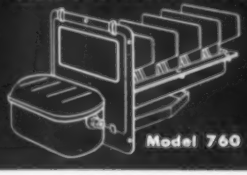
Skuttle's exclusive plate design allows unrestricted air-stream.

For further information, write to:

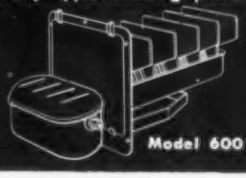


Skuttle
MANUFACTURING COMPANY
Milford, Michigan

There's a Skuttle humidifier for every type heating plant



Model 760



Model 600 B

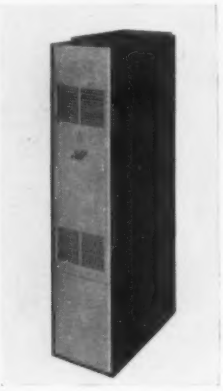
equipment developments

(Continued)

tures of 56 frame components with the shaft height and location of mounting holes of standard 66 frame —*Doerr Electric Corp., Dept. AA, Cedarburg, Wis.* Oversized bearing on shaft end makes it possible to obtain a ¾ in. diameter shaft extension. Units are available with type C machined face mounting, open, totally enclosed, fan cooled and explosion-proof designs.

Gas-Fired Furnaces

"HEATWAVE" SERIES of gas-fired highboy furnaces rated at 80,000 Btu input — *Southwest Mfg. Co.,*



Dept. AA, P.O. Box 151, *Aurora, Mo.* Units are said to require one-fourth less floor space than previous models. All internal parts can be removed through front access panel, according to the manufacturer.

Portable Air Filter

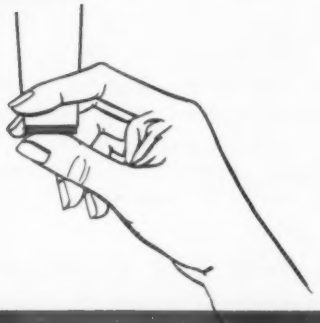
"SMOG-FREE" portable air purification unit designed to filter polluted air from a room — *Radex Corp., Dept. AA,* 2076 *Elston Ave., Chicago.* Unit consists primarily of a blower, mechanical filter and activated charcoal filter housed in metallic cabinet. Plugging cord into wall socket activates unit.

Bolt Fasteners

"DRIVEBOLT" FASTENERS for bolting parts in blind areas where standard bolts cannot be inserted — *Southco*

COMBINATION REGULATOR *with* SAFE LIGHTING FEATURE

PUSH BUTTON



First again in gas control development, Thermac offers appliance manufacturers the most outstanding advancement in gas pressure regulators and safety control devices on the market today. The new "SL" Series shown is identical to the widely accepted Thermac "SR" Combination Regulator and Thermo-Electric Pilot, except that a safe lighting feature operated by a red push button has been added.

Appliance Manufacturers are invited to request samples of this new Thermac "SL" Series with the safe lighting feature. The simplicity of this control is extremely important, particularly to the customer in the field. Easy to use, easy to understand — no mystifying gadgets to complicate usage. Like all Thermac controls, the "SL" is positive in action — rugged and fool-proof in construction.

Write today for capacities, prices and SAMPLES of the "SL" Series. Available now in ½" and ¾" sizes. Let us demonstrate to you Thermac's superiority of product and service.

SEND FOR SAMPLES

SIZES AVAILABLE TO HANDLE APPLIANCES UP THROUGH 250,000 BTU/HR.

THERMAC
HM COMPANY

24 years experience building gas controls.

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"OTHER METHODS RULED OUT..."

RAWL-DRIVES USED FOR ANCHORING TO PLASTERED BRICK FINISH...

ATLANTA 1000 UNIT HOUSING PROJECT

"Our company is in the process of completing a one thousand unit housing project here in your city.

At the suggestion of your man, we used your RAWL DRIVES for anchoring wooden shelving to plastered brick finish. The RAWL DRIVES were so satisfactory for this installation that I wanted to write you about my praise for the drive.

The carpenters put the shelves up in minimum time, and we were sure they were put up to stay when we used the Rawl Drive. Other methods of fastening were ruled out due to the expense and time involved.

I know the RAWL DRIVE was the best method of fastening because they are fast, economical and at the same time a sure hold."

Dave Messer

FARNSWORTH & CHAMBERS COMPANY, INCORPORATED

RAWL-DRIVE — *Drives Like a Nail, Holds Like a Bolt*

Write for Catalog, prices and free Dimensional Chart.

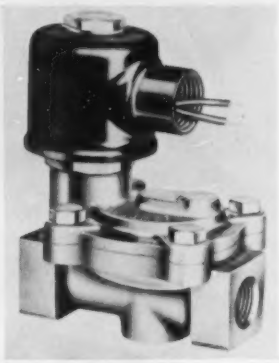
equipment developments

(Continued)

Div., South Chester Corp., Dept. AA, 200 Industrial Highway, Lester, Pa. Fasteners are inserted from nut side of job. Hole is drilled and hollow bolt with movable pin inside is inserted in hole with nut attached loosely. Driving pin flush with bottom end of bolt spreads top end of bolt to form blind head. Nut is wrenched tight. Units are made of cadmium plated steel, 2 in. long.

Solenoid Valve

MODEL K-181 diaphragm type solenoid valve designed for shutoff control of various liquids and gases over a range of operating pressures up to 250 psi — *General Controls Co., Dept. AA, 801 Allen Ave., Glendale*



1, Calif. "Multipoised" design is said to provide positive operation in any position. Valve is in 3/8 and 1/2 in. ipt, in two basic models for air, water gases or light oils. Units feature forged brass bodies, packless construction and two-wire continuous duty solenoid valves which are also available with optional waterproof coil, explosion-proof housing and manual opening device.

Axial Roof Ventilator

INDUSTRIAL ROOF ventilator with hollow, die-formed airfoil fan blades designed to improve exhaust efficiency with lowest possible wheel tip speeds — *Detroit Blower Corp., Dept. AA, 9867 Pacific Ave., Franklin Park, Ill.* Exhaust air leaving axial wheel spins upward where it is caught by guide

Easy to handle. This workman is installing a Monel batten seam roof on the tower of the Liberal Arts Building, St. John's University, Queens County, New York. Note his tools—the same ones used for handling any roofing metal.

How many Monel roofing jobs have you had lately?

You should have had a fair share. For more and more architects specify Monel* roofing these days.

Are you making a bid for this profitable business? Or do you let your competitors have it without a murmur?

Give them some real competition! Put in your bid even if you've never handled a Monel nickel-copper alloy roofing job in your life.

Working with Monel is hardly different from handling any roofing metal. There are no special fabricating techniques to learn. Just cut . . . bend or form . . . and install.

Following good roofing practice, you pre-tin the sheet at your shop. Use a heavy soldering iron for installation, and be sure to keep it *hot*. Gives you as neat and watertight a seam as you'd ever want to see!

So don't let those Monel nickel-copper alloy roofing jobs slip through your fingers. Be ready to quote on the ones in your locality. On office buildings. Public buildings. Churches. Schools. Factories. Even private homes. *Anywhere that somebody wants long-lasting sheet metal work.*

Write us for a copy of our free bulletin, *Basic Application Data — Monel Roofing Sheet.* It gives you just the kind of information you need to do work you'll take pride in pointing out to other prospects. Send for this bulletin today. A postcard will do fine. Ask for "Roofers' Bulletin."

*Registered Trademark

The International Nickel Company, Inc.
67 Wall Street New York 5, N. Y.

One of the many Monel jobs going on. On this college building, batten seam roofing, sheathing on the tower, and through-wall flashings are of long-lasting, corrosion-resisting Monel. Architect: Henry V. Murphy, Brooklyn, N. Y. General contractor: Veit & Company, Inc., Flushing, N. Y. Monel sheet metal work: John Schneider Roofing Contractors, Inc., Brooklyn.

INCO TRADE MARK NICKEL ALLOYS

Monel Roofing . . . *"for the life of the building"*

how PREMIER furnace cleaners cut your labor-time costs

Labor-time takes 90% of your maintenance cleaning costs. PREMIER saves you money because it reduces that time. Here's how:

1 You spend less time on each job because of special pleated filter design. The filters in PREMIER machines are 3 times larger than others . . . 3 times more working-filter area than other makes. This saves time . . . boosts profit of each job. Notice this machine is half the size of ordinary cleaners, yet holds a full half bushel.

2 PREMIER equipment is practically maintenance-free because their special built motors are well ventilated to run cooler. Extra air flow over the motor is possible also by the exclusive "3-times larger" filter. This means longer motor life.

3 All models are completely equipped with standard attachments. Special tools for out-of-the-ordinary jobs are also available.

PREMIER YOUR BEST BUY

4 Low initial cost due to high volume of sales. Fine engineering design born of years of experience have made PREMIER machines the preference of cleaning men.

5 Listed by Underwriters' Laboratories and Canadian Standard Ass'n.

"OLD RELIABLE"—first and most famous Premier furnace and air-conditioning cleaner (P-908F) with external filter bag for "hot jobs" now also is available with new 3-times-larger internal filter. For information on *all* Premier furnace and air conditioning cleaners, write today for Folder FB14.

PREMIER

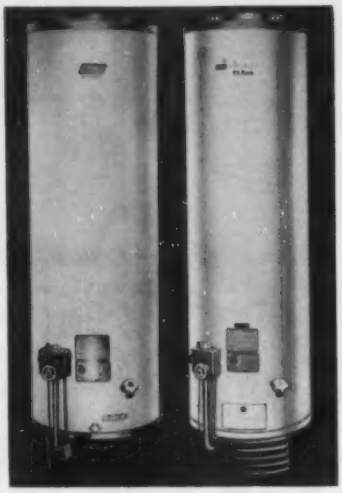
PREMIER COMPANY
Dept. 406
755 Woodlawn Ave., St. Paul 1, Minnesota
35 Gerrard St. West, Toronto, Canada

equipment developments
(Continued)

vanes which are part of the head, and spun out into the atmosphere, decreasing noise, the company states. Overall height is about 1½ ft. Blade diameters range from 9 to 48 in. Motor-fan outputs are reported capable of exhausting 350 to 34,430 cfm.

Water Heaters

LINE OF GAS-FIRED water heaters in 20, 30 and 40 gal sizes and in galvanized or corrosion resistant vitreous enamel and stone lined tanks



— *Coleman Co., Inc., Dept. AA, St. Francis & Second St., Wichita* 1, *Kans.* Raised, drilled-port burner is designed for greater efficiency with all types of gases and greater recovery rate. Other features: deep inlet tube; spiral flue baffle; 1 in. glass fiber insulation; automatic thermostat; offset heat exchanger and 100 percent safety pilot. Units are said to heat 23.1 gal of water through 100 deg temperature rise or 38.5 gal through 60 deg rise in one hour. Units are designed for alcove or closet installation, the company states.

Electronic Air Cleaners

MODEL HEV electronic air cleaner designed for commercial buildings, industrial plants, laboratories and

ORIGINAL EQUIPMENT MANUFACTURERS:

If you are bothered by the vibration and noise problem . . . be sure to check

SILENTRIDE* *V-Belts*

This belt was developed for use in air conditioning equipment, forced air furnaces and window and attic fans. May be used equally well on washing machines, dryers and light work-shop equipment. An independent check proves that the SILENTRIDE absorbs 24% more vibration than the next best "low vibration" belt. Popular Sizes.

Zatko

STAMPED ONE PIECE PULLEY

World's Largest Seller

Long the favorite with manufacturers of Automobile, Heating and Air Conditioning equipment. Zatko Pulleys are recognized as the strongest and most economical on the market. Millions now in use.

Write for literature giving sizes and prices.

*TM Pending

Zatko METAL PRODUCTS CO.
20850 ST. CLAIR AVENUE
CLEVELAND 17, OHIO
World's largest manufacturer of stamped ONE-PIECE Pulleys for Automotive, Heating and Air Conditioning manufacturers

This is an ad to Builders, but it concerns your business! It appeared in July "House & Home" and August "Practical Builder."

Merion Homes, above, as well as the Haverford Park Apartments, below, were built by Madway Engineers & Constructors of Wayne, Pa. Heating contractor: Farewell & Holt, Chestnut Hill. Reynolds Aluminum duct sheet from National Builder's Supply Company, Inc., Radnor, Pa.

with Rustproof Ducts of

REYNOLDS ALUMINUM

Both the building developments shown are in suburban Philadelphia—Merion Homes in Merion, Pa., Haverford Park Apartments in Ardmore. They offer a wide variety of design. But they have this in common...although they are not now air-conditioned, they are *engineered for year-round air conditioning.*

They have rustproof duct systems of Reynolds Aluminum. When summer cooling units are installed, the resulting condensation on duct walls can cause no trouble. The owners avoid rust damage that otherwise could mean costly replacement, even to tearing down walls.

Builders are making a feature of "future" air conditioning—ready to be plugged in. Reynolds is promoting this important trend in national magazines and on network TV. Tie in with this promotion and identify your ducts as rustproof aluminum—Reynolds Aluminum.

Ducts of Reynolds Aluminum in Haverford Park Apartments.

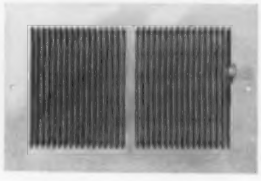
CONSUMER LITERATURE AVAILABLE FOR DISTRIBUTION...ALSO EMBLEMS FOR IDENTIFICATION OF RUSTPROOF DUCTS OF REYNOLDS ALUMINUM. WRITE TO REYNOLDS METALS COMPANY GENERAL SALES OFFICE, LOUISVILLE 1, KY.

The Finest Products Made with Aluminum are made with REYNOLDS ALUMINUM

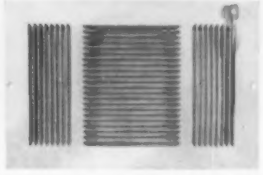
REYNOLDS ALUMINUM

See "FRONTIER," Reynolds great dramatic series, Sundays, NBC-TV Network.

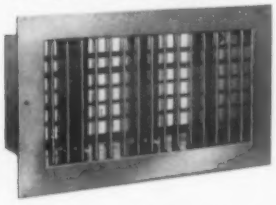
Multi-Louver Register



Sidewall Perimeter Diffuser



4-Way Deflector with Opp. Blade



A Complete line of Registers, Grilles & Diffusers for the Residential Field plus a Complete Line of Double Deflection Registers & Diffusers with Opposed Blade Dampers, Extractors & Volume Control for the Commercial & Air Conditioning Field

WRITE OR WIRE FOR PRICE CATALOG AND NAME OF YOUR NEAREST JOBBER

KRUEGER AIR CONDITIONING COMPANY

19 E. RILLITO • TUCSON, ARIZONA • PHONE 2-2805

equipment developments

(Continued)

specialized applications — *Trion, Inc., Dept. AA,* 1000 *Island Ave., McKees Rocks, Pa.* Units are placed in return air duct upstream of cooling and heating coils; reported ability to accommodate higher velocities than previous models eliminates need for increasing size of duct to accommodate large cleaner. Smaller unit more closely matches face area of cooling and heating coils. Particles are charged and attracted to grounded plates.

Oil-Fired Furnace

"Hi-Lo Boy" oil-fired furnace with redesigned heat exchanger — *Delta Heating Corp., Dept. AA,* 1 *Cole St., Trenton* 8, *N.J.* Heat exchanger is comprised of several independent steel sections welded together to

produce rated output of each of the seven sizes available (more sections are added as furnace sizes increase). Flue pipe is interchangeable and may be attached at front, top, rear or either side. Sizes range from 68,000 to 210,000 Btuh output.

Glass Plastic Fume Hoods

Lightweight corrosion resistant fume hood made of polyester glass plastic—*Haveg Industries, Inc., Dept. AA,* 900 *Greenbank Rd., Wilmington, Del.* Advantages claimed are light weight, high impact strength and high resistance to hydrochloric acid and other corrosive fumes. Units are especially designed for industrial fume removal applications, the company states.

Electric Drills

Models 25 and 26 electric drills with long switch handles for better balance, and larger motor than previous models—*Thor Power Tool Co., Dept. AA, Aurora, Ill.* Model 25 has a ¼ in. capacity in steel; ½ in.

ON THE *Skyline*—

NOTHING SERVES LIKE

HUSSEY COPPER

ROOF DRAINAGE

PRODUCTS

- Copper Sheet Metal
- Rolled Copper Flashing
- Majestic 3-Way Thru Wall Copper Flashing
- Copper Ridge Roll
- Copper Conductor Pipe
- Copper Eave Troughs
- Roof Drainage Accessories
- Copper Tubing
- Copper and Brass Pipe
- Copper Nails

COPPER HUSSEY BRASS

Nowhere do the advantages of copper serve so distinctively as in the roof drainage systems of fine homes and buildings. HUSSEY has been one of America's best known names in copper roofing products for over 100 years . . . a reliable reputation you can put to work on your *next* job. In quantity, order direct from the mill or immediate job lot service from any of seven conveniently located warehouses listed below.

C. G. HUSSEY & CO.

(Division of Copper Range Co.)

ROLLING MILLS AND GENERAL OFFICES

PITTSBURGH 19, PA.

***7* CONVENIENT WAREHOUSES**

PITTSBURGH (19) 2850 Second Ave. CINCINNATI (37) 1045 Meta Drive ST. LOUIS (1) Central Terminal Bldg.

CLEVELAND (3) 5318 St Clair Ave. CHICAGO (18) 3900 N. Elston Ave. PHILADELPHIA (30) 1632 Fairmount Ave.

NEW YORK, LONG ISLAND CITY (6) 34-39 Thirty-first St.

We have "a Bear by the Tail!"

When we introduced our new ServiceSaver Fuel-unit, a few weeks ago, we proceeded with some caution. Not because we had any doubts about the performance of the units: we *knew* how efficiently the new self-cleaning, non-clogging rotary filter operated. More than 8 years of field testing had proved that. But we didn't anticipate the tremendous interest that has followed our announcement of the new unit.

And so what happened? Everybody "wants in." Manufacturers, wholesalers and dealers have asked—even insisted—on securing new ServiceSaver Fuel-units immediately.

Unfortunately, we can't supply everyone immediately. Even with our production greatly increased over the original schedule, we will be able to supply only a part of the demand during the balance of 1956.

Fortunately, however, we have continued—even increased—our production of the 8000 Series Fuel-units that have set the pace for dependable performance and easy servicing.

So, if you've been disappointed by our inability to meet the demand for ServiceSaver Fuel-units, we apologize—and urge you to continue ordering the 8000 Series units. Right now, we have "*a bear by the tail*," but we'll soon figure a way out. When we do, everyone—including ourselves—will be happy.

For data on the 8000 Series Fuel-units, write for Bulletin A8A2; for data on the ServiceSaver units, ask for Bulletin A9A1.

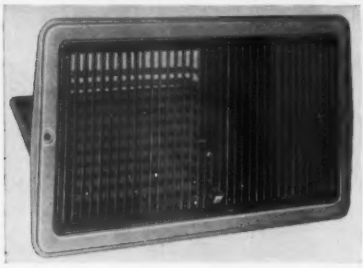
WEBSTER ELECTRIC
RACINE WISCONSIN

MANUFACTURERS OF FUEL-UNITS, IGNITION TRANSFORMERS AND DELAYTROLS

in wood. Universal series wound a-c or d-c motor runs 2200 rpm (1400 rpm under full load). Unit has ¼ in. geared chuck with key and features anti-friction oilless bearings; overall length is 9 in.; weight is 4 lb. Shell is vented, die-cast aluminum. Model 26 has same features but is equipped with special heavy duty radial thrust ball bearings on the spindle. It weighs 4½ lb. Both are available in kits containing other attachments.

Air Conditioning Registers

MODELS 20-R AND 22-R air conditioning registers designed for sidewall installation and baseboard application, respectively, for installations were ducts come down from ceiling — *Air Control Products, Inc., Dept. AA, Coopersville, Mich.* Four way air control is maintained by adjustable vertical front fins and horizontal back fins set at a 22½ deg downward deflection. Dampers pivot from bottom. Four sizes include 8 × 6 in., 10 × 6 in., 12 × 6 in. and 14 × 6 in. models.



Gas-Fired Furnaces

PAC MODEL gas-fired horizontal furnaces rated at 75,000 Btuh and designed for versatility in installation—*Reznor Mfg. Co., Dept. AA, Mercer, Pa.* Interchangeable panels on blower compartment permit bringing return air in at top, bottom, or either side as well as at the end. Access door to controls and burners can be located on most convenient side because air flow may be in either direction. Unit measures 22¾ ×22¾×37½ in. Filters and filter racks are optional. Filters can be changed from outside the unit with no doors or access plates to open, the company reports.

Abrasive Saw

ABR-A-SAW" abrasive saw for cutting roof deck, duct supports, equipment frames, etc.—*Collins Machinery Corp., Dept. AA, 5474 Alhambra Ave., Los Angeles 32.* Featured are lightweight design; foot operated V-wedge holddown for positive locking of material; double row protective ball bearings with air seal ring;

One Ring—
or thousands . . .
you'll **Gain More** with
NATIONAL Angle Rings

If you haven't worked with rings rolled by National, you're due for a pleasant surprise . . . for these true rings, guaranteed to fit your job, are:

1. **Accurately rolled with uniform curvatures.**
2. **Easy to fit on the job.**
3. **Punched with the bolt or rivet holes you need.**
4. **Available in the metals you use — carbon steels, stainless steels, aluminum, etc.**
5. **The best value at the best price.**
6. **Ready for immediate delivery in leg out rings in many sizes.**

National rolls to your specifications — angles, channels, tees, rods, flat-bars, pipe and tube —plain, or punched for riveting or bolting.

Tens of thousands of National rings have been used in all parts of the country by large and small sheet metal shops. They are rolled by experts on the most modern high-speed equipment to give you a precision ring at the lowest cost. Write today about your requirements, and the National list of stock sizes and quantity discounts.

Sheet metal fabricating and assembly work is another National specialty organized for YOU. Use it as your stand-by facility.

Phone —
Bishop 7-4255

NATIONAL METAL FABRICATORS
2142 S. Sawyer Avenue • Chicago 23, Illinois

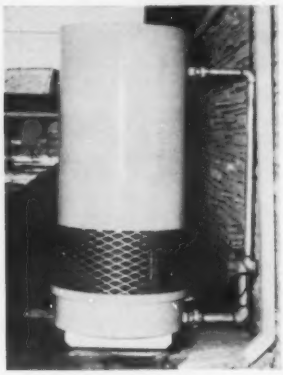
equipment developments

(Continued)

full length removable chip and dust tray; protective head for operator safety; new arbor design for longer wheel life; good balance to minimize operator fatigue. Saw cuts cold rolled steel, angle iron, channels, etc. Several pieces of metal of different sizes and types can be cut at same time, the manufacturer reports.

Induced Draft Cooling Towers

"CAREFREE" induced draft cooling tower which uses no fan nor motor —*Koch Engineering Co., Inc., Dept. AA,* 321 *W. Douglas, Wichita, Kans.* Air movement and cooling are accomplished by a system of nozzles



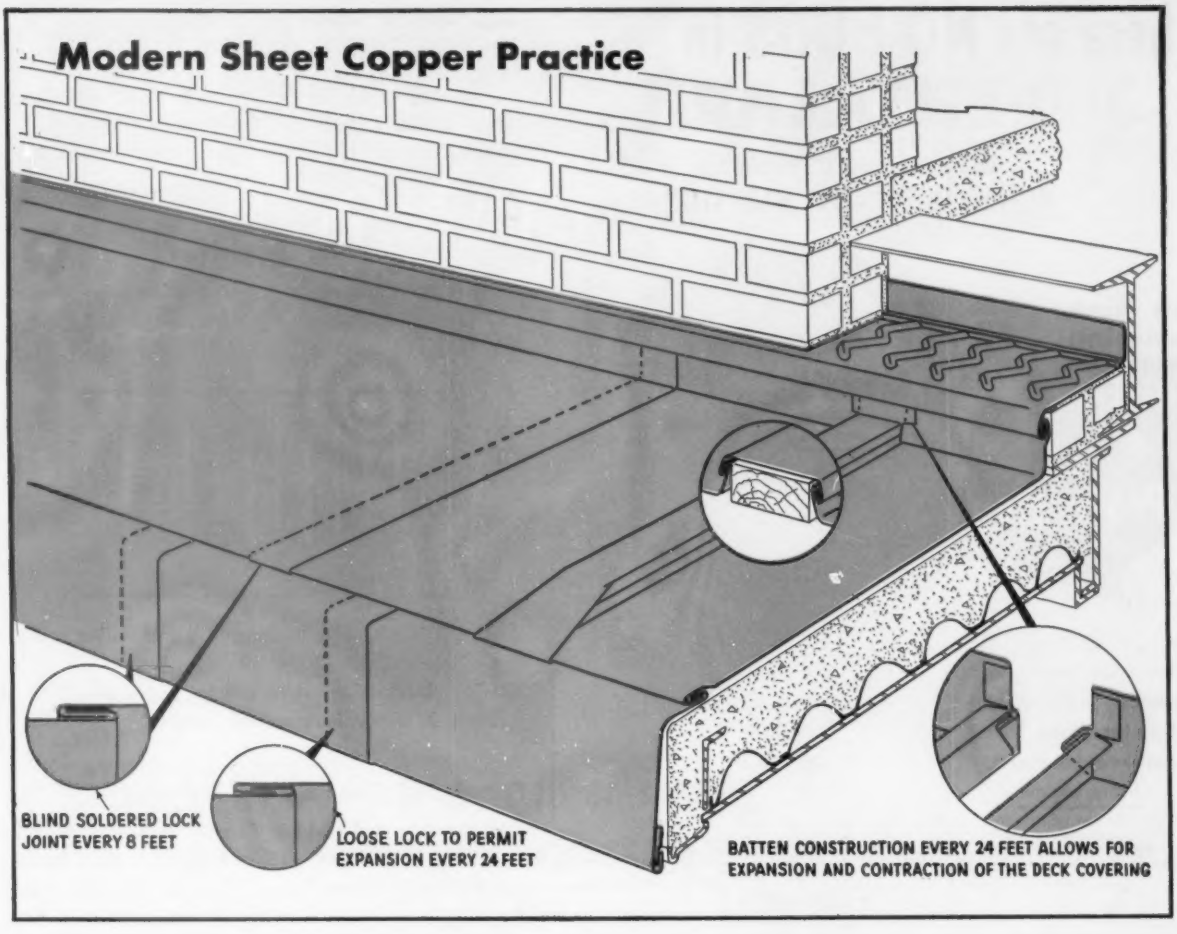
at top of tower which spray downward to cause movement of air volume through tower and atomize water into minute particles. Atomizing is said to provide improved cooling efficiency and to eliminate the need for wood fillers and baffles. Plastic coating inside and out provides protection for metal surfaces. Unit may be installed at any convenient remote location.

Truck Cargo Enclosures

"CANOPY TOP" all steel cargo enclosures for its ½, ¾, 1 and 1½ ton service bodies — *Service-Master Div., McCabe-Powers Auto Body Co., Dept. AA,* 5900 *N. Broadway, St. Louis* 15, *Mo.* Enclosure is 24 in. high, providing 53 in. floor-to-roof height when bolted to compartment top on both sides of body. Strap-hinged double rear doors have lock and automobile type handle. A 10 × 15 in. window is in each door and in head panel. Two full length shelves are on each side.

Aluminum Lined Fiber Duct

ALUMINUM LINED fiber air duct designed to fit all standard metal elbows and tees and suitable for use with radial and lateral duct systems — *Delta Co., Dept. AA,* 333 *W. 24th Pl., Chicago* 16. Body of duct is constructed of plys of long jute fiber. Each ply is bonded with water-resistant adhesive; outer ply is


Modern Sheet Copper Practice
BLIND SOLDERED LOCK JOINT EVERY 8 FEET
LOOSE LOCK TO PERMIT EXPANSION EVERY 24 FEET
BATTEN CONSTRUCTION EVERY 24 FEET ALLOWS FOR EXPANSION AND CONTRACTION OF THE DECK COVERING

Cut cooling load with copper-faced sunshades

THE trend toward larger window area and summer air conditioning has made the sunshade an ever more important feature in architecture. In areas where freezing temperatures occur, it is advisable to cover the sunshade with copper.

Typical application of copper-faced sunshades in an apartment building.

The drawing above shows practices recommended in the design of a 20-ounce cornice-temper copper covering, interlocked with ANACONDA Through-Wall Flashing for positive, long-life protection. This is one of the new drawings shown in "Modern Sheet Copper Practices," issued by The American Brass Company.

AWARD WINNER. The 104-page book was awarded the Certificate of Exceptional Merit in the 1956 Building Products Literature Competition sponsored by The American Institute of Architects and The Producers' Council, Inc. "An exceptionally comprehensive and well-arranged informative literature illustrating and describing the correct uses of sheet copper for various roofing and flashing purposes."

For your free copy write to The American Brass Company, Waterbury 20, Conn. In Canada, Anaconda American Brass Limited, New Toronto, Ont. Ask for Anaconda Publication C-1.

For protection that lasts, use

ANACONDA® SHEET COPPER

There are NO BUGS in VENTALARM

T. M. REG. U.S. PAT. OFF.

Original and Dependable
WHISTLING TANK FILL SIGNAL

New Model featuring
"Built-In" Bug Protection

Now . . . all VENTALARM Signals include a non-corroding screen sealed into position over the whistle-top opening. Venting remains as free as ever, but no bug can get into the whistle to muffle or stifle the sound.

"Just fill 'til the whistle stops"

Free from "BUGS" of any kind

VENTALARM Signal has won "endorsement by use" from over 4500 major and independent dealers.

Full variety of models to satisfy every tank condition, new or old.

Sold through a nationwide network of leading Supply Houses.

Underwriter's Laboratories Listed.

Universally approved by leading Fire and Safety Authorities.

Complete Merchandising Support for the Fuel Oil and Oil Burner Dealer. Tested literature available at cost to help you build sales with VENTALARM Signal.

The one decision you can make that will benefit your company more than any other is to equip all your accounts, new and old, with VENTALARM Signal.

Saves up to 30% of delivery costs.

Over 4,000,000 VENTALARM Signals proven in field use.

VENTALARM Signal and other Scully Products are manufactured under U.S. and Foreign Patents or Patents Pending.

Contact your Regular Supply House

SCULLY SIGNAL COMPANY

174 Green Street, Melrose 76, Mass.

Canadian Branch: SCULLY SIGNAL LTD., 286 King St. W., Toronto, Ontario

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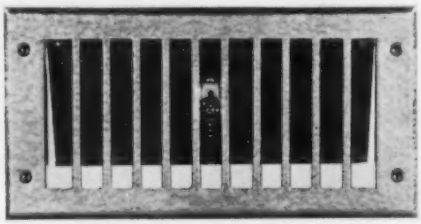
equipment developments (Continued)

asphalt-saturated. Inside is lined with aluminum. Duct is said to withstand temperatures up to 350 F; sections are in 2 to 16 in. i.d. and in lengths up to 20 ft.

Heating-Cooling Registers

"HOT-COLD" air register for heating and cooling installations — *Lynn Corp., Inc., Dept. AA, 234 S. Fountain St., Marshall, Mich.* Constructed of 19 ga



steel, unit is adaptable to floor, wall and ceiling mounting. Overall size is 5 × 10 in., with 3½ × 8 in. opening. Damper opens to full 90 deg angle. Unit is finished in silver hammerloid lacquer.

Furnaces, Conversion Burners

FIVE LOWBOY and highboy furnace models ranging in capacities from 80,000 to 100,000 Btu and conversion gas burners ranging from 75,000 to 390,000 Btu— *Burn-O-Matic Gas Burner Co. Dept. AA, 212 N. First St., Minneapolis.* Furnace heat exchanger is sectionally designed; entire surface is curved, ribbed or embossed to prevent noise of metal contraction and expansion; hot flue gases are squeezed through narrow passages in sections. Heavy duty motor has overload protection switch, is mounted in rubber cradle. Ribbon type pressed steel burners have stainless steel ports. Conversion burner, in three models, features adjustable venturi and burner head to fit most warm air or gravity furnaces; flame retention ring designed for fast ignition and silent operation; manifold designed so gas line may be connected to either side; flame spreader of heavy cast iron.

Hand Powered Drive Tool

HAMMER-POWERED stud driver with "Conic" stud design, featuring ballistic point, designed for anchoring fasteners into concrete, brick, cement, masonry, stucco and steel up to 5/16 in. — *Hilti Rapid Fastening Systems, Inc., Dept. AA, 55 Vandam St., New York* 13. Fastener is inserted in tool, tapped to align, and driven home with a few blows with a 2 or 3 lb hand sledge. With ¾ in. penetration in concrete, pull-out resistance is 500 to 800 lb; tool can make up to 200 fastenings per hour, the company states.

NOW

SELL MORE . MAKE MORE
SAVE WORK . CUT EXPENSES
REDUCE STOCK INVENTORIES

sell and specify

A-lum-O-Aire

permanent dry-type

FILTERS

For All Warm-Air Furnaces and Winter-Summer Air-Conditioners

UL

Standard 1" and 2" sizes for any make and model in stock. Special sizes to order shipped in ONE WEEK!

BEST BET for peak filter sales!

the filter the whole industry is talking about!

Here's the filter that practically *guarantees* fast-action, "register-ringing" filter merchandising! Features that *help* you sell, *plus* an established demand, make it a real volume-builder.

You'll *sell* more because the market is already primed and educated on the economy and superior efficiency of new *permanent* filters. You'll make more because the new "A-lum-O-Aire" pricing policy lets you realize a better return while you're meeting and *beating* competition!

What's more, "A-lum-O-Aire" is a natural tie-in with your present service operations. You gain better control of your service accounts – and add new ones as you go along! Better yet, you save time, effort and expensive material costs required by out-dated filter cleaning methods.

Sounds fine, so far! But what about "minimum quantities," *quotas* and stock requirements? *That's* where *"A-lum-O-Aire"* tops them all! You *buy* only what you can *sell* and you stock only what you *NEED!* And, you can forget *sizing* problems. Eliminate risk and warehouse expense. Let *us* worry about storage. Send us your order *NOW* and let the plan prove itself!

Safe, clean and economical, *"A-lum-O-Aire"* needs no messy oils or adhesives to catch dirt, dust or lint particles. Revolutionary "A-lum-O" Aluminum Wool does *ALL* the filtering; saves work and worry – washes clean in a jiffy with cold water. Rustproof and fireproof. Approved by Underwriters' (Class 1). Costs less per clean filter than any other and they can be cleaned as often as necessary without sacrifice of efficiency. Saves on housecleaning and redecorating costs, because there is no oily film to settle on walls, floors or furnishings.

That all adds up to *real* customer satisfaction! YOU benefit by added high-profit sales with better service activities and more-lucrative labor and material savings. Now's the time to get set for filter merchandising that really pays off! Costs you nothing to get the facts. Mail coupon, TODAY!

Carey Electronic Engineering Co.
Metal Wool Division (Dept. A-8)
1880 Clifton Avenue
Springfield, Ohio

☐ dealer
☐ distributor

Gentlemen:

Please send me full details and pricing schedules on new A-lum-O-Aire Filters. I want to know how we can improve our filter merchandising activities.

Name _____ Title _____

Company _____

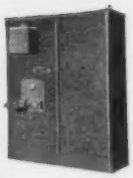
Address _____

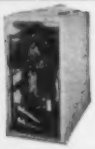
City _____ Zone _____ State _____

Attention Distributors: Exclusive territories in several selected areas still available. Write for details, today!

Carey
Electronic Engineering Co.
METAL WOOL DIVISION
Springfield, Ohio

FOR
Price...
Pride...
Profit...
Choose
Majestic


TWIN AIR CONDITIONERS


WATER COOLED UNITS

FORCED AIR FURNACES

Gas or oil fired winter air conditioners for small or large homes, in designs that allow virtually unlimited choice of placement and system arrangement. Models from 76,000 to 400,000 BTU output, in up, down, or horizontal flow design.

COMMERCIAL UNITS

MATCHED COOLING UNITS

In summer air conditioning, Majestic has the ideal, economical answer for your needs — 2, 3, or 5 ton self-contained water-cooled units or remote air-cooled models, in matching twin units or for add-on installations. These are quality units, designed for simplified installation and dependable operation.

PLENUM EVAPORATOR CABINETS

PLUS HARD-WORKING AIDS

Majestic furnishes all kinds of furnace fittings, ducts, registers, and the like, giving the dealer the benefits of "single source" purchasing. You owe it to yourself to get the complete story of Majestic's sales, service, and installation tools, and wholehearted dealer cooperation.

GAS OR OIL FURNACES

Write today for the Majestic Story

REMOTE AIR COOLED UNITS

The Majestic Co., Inc.
394 Erie Street, Huntington, Ind.

COMPLETE ALL-YEAR MODELS

new literature . . .

Marketing Surveys

No. 73 in the series of Management Aids for Small Manufacturers explains how, through making a marketing survey, a small businessman can determine his share of the business potential of an area. Titled "Making a Marketing Survey," the pamphlet outlines steps to be followed in making a research survey and explains how to analyze the data obtained—*Small Business Administration, Washington 25, D. C.*

Summer Cooling Equipment

BROCHURE describes the features of water and air cooled summer cooling units for residences. Also illustrated are commercial units including a ceiling suspended model for large open areas such as stores, churches, recreation rooms, etc. Other equipment described includes controls, water towers, electronic air cleaners, dampers and ultra-violet plenum lamps—*The Majestic Co., Inc., Dept. AA, 733 Erie St., Huntington, Ind.*

Oil Burner Equipment, Servicing Tools

FOUR COLOR CIRCULAR describes calibrated draft regulators, oil burner nozzles, ignition electrode assemblies, flame inspection mirrors, nozzle kits and nozzle adapters—*Wm. Steinen Mfg. Co., Dept. AA, 43 Bruen St., Newark 5, N. J.*

Corrosion Resistant Duct and Fittings

CATALOG C-13 contains information on plastic duct and fittings for applications involving corrosive gases and fumes. Made of polyester glass reinforced plastic, the ducts are light in weight, are said to be tough and durable as well as low in cost. They are available in both round and rectangular shapes—*Haveg Industries, Dept. AA, 900 Greenbank Rd., Wilmington, Del.*

Packaged Air Conditioners

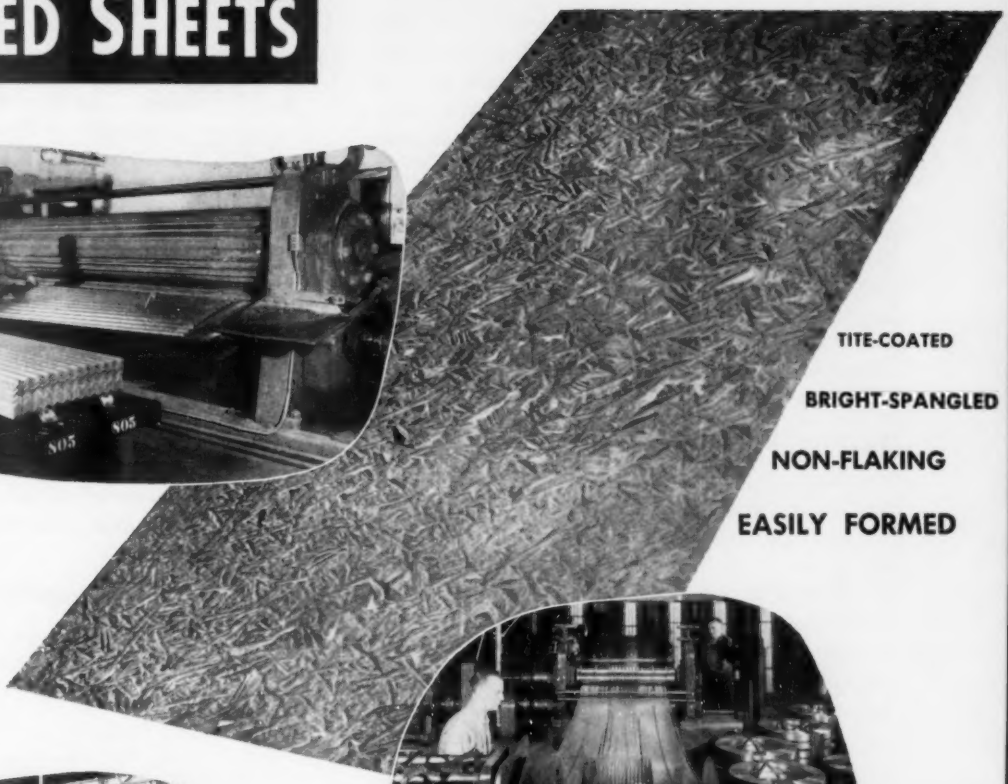
BULLETIN C-1100-S81D P gives dimensions, component parts and connection sizes of 10 and 15 ton packaged air conditioners. The units are factory equipped with throwaway type filters, double inlet centrifugal fans, direct expansion cooling coils and two shell and coil type condensers. They can be installed with or without ductwork—*Worthington Corp., Dept. AA, Harrison, N. J.*

Punching and Notching Units

HOLE PUNCHING AND NOTCHING equipment is described in a 52 page spiral bound catalog. Series A hole punching and notching units have standard 8⅜ in. shut

GALVANIZED SHEETS

- CORRUGATED TO SIZE OR STOCK SIZES

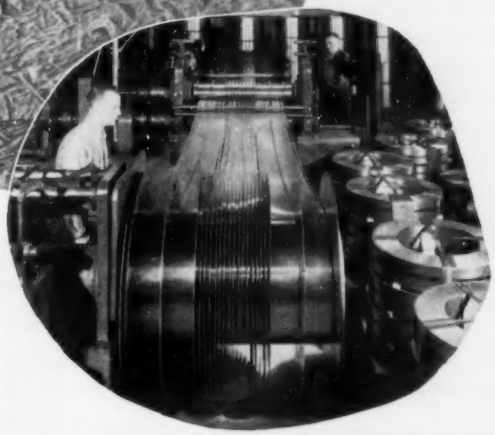


TITE-COATED

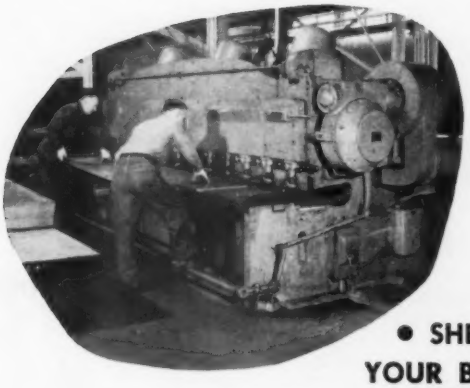
BRIGHT-SPANGLED

NON-FLAKING

EASILY FORMED



- SLIT TO YOUR WIDTH IN COILS



- SHEARED TO YOUR BLANK OR STRIP SIZE

QUALITY AND SERVICE SINCE 1918

GREAT WESTERN STEEL COMPANY

GENERAL OFFICE AND PLANT — 2300 WEST 58th STREET, CHICAGO 36, ILLINOIS — TELEPHONE HEMLOCK 4-5800

MILWAUKEE DIVISION — 2547 WEST HAMPTON AVENUE — TELEPHONE HILLTOP 4-3092

REPRESENTATIVES IN PRINCIPAL MIDWESTERN CITIES

PRINCIPAL PRODUCTS

COLD ROLLED SHEETS
COLD ROLLED STRIP
GALVANIZED SHEETS

HOT ROLLED SHEETS
HOT ROLLED STRIP
LONG TERNE SHEETS

HOT ROLLED PICKLED SHEETS
HOT ROLLED PICKLED STRIP
GALVANNEALED SHEETS

new literature

(*Continued*)

height and 3½ in. die height for punching and notching sheets and angles up to ¼ in. thick. Series B units for punching and notching sheets and angles up to ⅛ in. thick have standard 5½ in. shut height and 2-19/32 in. die height. Series AE hole punching units with ⅜ in. shut height and 5½ in. die height are designed for punching standard and irregular shaped angles, channels and extrusions up to ¼ in. thick. Series C hole punching units, for punching sheets, straight angles and bulb angles up to ⅛ in. thick have standard 7½ in. shut height and 3⅛ in. die height—*Punch Products Corp., Dept. AA,* 3800 *Highland Ave., Niagara Falls, N. Y.*

Testing, Rating Heavy Duty Furnaces

CODE FOR TESTING AND RATING Heavy Duty Furnaces and Direct-Fired Unit Heaters is applicable to forced warm air furnaces and direct-fired unit heaters having output ratings in excess of 250,000 Btuh. Definitions are given of the various parts of the heaters and of the terms used in referring to the heat input and output or rating of the units. The code contains eight sections covering purpose, scope, definitions, rating limits, testing equipment, testing procedures and rating procedures—*American Society of Heating and Air-Conditioning Engineers, Dept. AA,* 62 *Worth St., New York* 13.

Portable Nibblers

CIRCULAR illustrates and describes Model HN heavy duty nibbler designed to cut through 10 gage stainless steel (8 gage mild) without distortion. Also described is "Little Wonder" nibbler for cutting through 14 gage steel—*Fenway Machine Co., Dept. AA, Edgemont & Clementine Sts., Philadelphia* 34.

Humidifiers

POCKET SIZE BOOKLET entitled Water in Our Air explains what humidity is and the effect it has on comfort and health. Slanted toward the consumer, the booklet explains how the home owner can determine the relative humidity of the air in his home and describes the adverse effects of too-dry winter air—*Skuttle Mfg. Co., Dept. AA, Milford, Mich.*

Self-Checking Monitoring System

LITERATURE explains how operating systems employing "Fail-Safe" monitoring technique continually check themselves by a pulsation method that periodically sim-

STANDARD BRAKES
Capacities up to 12-gauge sheet metal and bending lengths up to 12 feet.

Hand Operated
BENDING BRAKES
One Man Operation • Quick Adjustment • Rugged Construction

FOLDER BRAKES
The simplicity and ease of operation make this a desirable machine for light sheet metal work. Seams and locks can be made efficiently. Capacity up to 20-gauge in three sizes of bending lengths of 36, 42, and 48 inches. Foot treadle clamp.

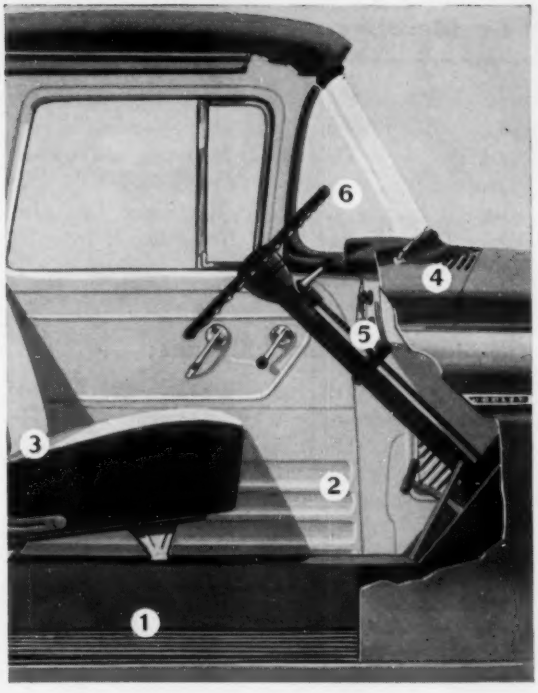
CHICAGO
DREIS & KRUMP

PORTABLE BRAKES
Set up shop right on the job. Capacity 20-gauge sheet metal in two sizes with bending lengths of 49 and 61 inches.

Descriptive Literature on Request.
DREIS & KRUMP
MANUFACTURING COMPANY
7404 S. Loomis Boulevard, Chicago 36, Illinois

Here's the place to TAKE IT EASY on tough jobs!

New comfort-zone compartments in Chevrolet panel and Suburban Carryall models make your work easier and safer than ever before. And they give you the pleasure and prestige of style that equals many passenger cars!



Those numbers in the picture (right) point out features that make business almost a *pleasure* when you work behind the wheel of a modern Chevrolet Task-Force truck! Here are some of the reasons why hauling in a Chevy is *easy on you:*

❶ *Concealed Safety Steps*—located *inside* the doors—stay clear of snow, mud, and ice, give you firmer, safer footing. ❷ *Spacious leg room* helps keep you comfortable all day long, brings you home fresher and more relaxed. ❸ *Nu-Flex seat* design means *comfortable* hauling! Jackstringer springs give ideal body support; seat back adjusts easily. ❹ *High-Level ventilation system* keeps the interior clean, cool, comfortable. Intake is at the bottom of the windshield—away from road heat and dust. ❺ *No-Glare instrument panel,* with handsome two-tone finish, puts instruments and controls within easy sight and reach. ❻ *Panoramic windshield* provides a full 1000 square inches of forward viewing area to make driving safer, easier.

And you'll find bright, stylish interior appointments that add to your sense of pleasure on the job. If your work calls for long hours on the road, you'll enjoy life more in a Chevrolet truck! Check one over for yourself at your dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

These fleet, nimble, light-duty Chevies help you get more done more easily!

Staying ahead of tight hauling schedules is a breeze in these modern trucks! Efficient short-stroke V8's* get you where you're going faster—and with good economy. Ball-Gear steering saves you time and work in traffic. And for the ultimate in easy going, there are power brakes,* power steering,* ***Hydra-Matic*** transmission!*

**Optional at extra cost.*

CHEVROLET

NEW CHEVROLET TASK·FORCE TRUCKS

Anything less is an old-fashioned truck!

ulates unsafe conditions. According to the company, the technique is sufficiently basic for application to electrical, electronic, mechanical, hydraulic and nuclear systems. It may be used with residential as well as industrial heating systems—*Scully Signal Co., Electronics Div., Dept. AA, 174 Green St., Melrose 76, Mass.*

Fill Alarms for Fuel Oil Tanks

"KING" FILL ALARMS featuring aluminum tube and whistle are described in a two color data sheet. The alarms are available in nine sizes to cover a wide range of applications—*Oil Equipment Mfg. Co., Dept. AA, 169 Derby Ave., New Haven, Conn.*

Hand Powered Drive Tools

LITERATURE describes hammer powered stud driver as well as "Conic" studs and pins. According to the company, only three or four hammer strokes are needed to anchor the fasteners into materials such as steel, concrete, masonry, etc.—*Hilti Rapid Fastening Systems, Inc., Dept. AA, 55 Van Dam St., New York 13.*

Duct Insulation

BULLETIN gives engineering data and application instructions for semi-rigid, spun mineral wool duct insulation. Thermal and sound absorption characteristics of the material, which is designed for application to ducts up to 450 F, are presented in tabular form. The physical, chemical, mechanical and handling properties of the insulation are also described—*Baldwin-Hill Co., Dept. AA, 500 Breunig Ave., Trenton, N. J.*

Duct Sizing Calculator

CALCULATOR was designed to facilitate the work of sizing air ducts. With the calculator, available at a cost of $1.50, is an instruction manual which gives a complete explanation of how to use the calculator and also explains in detail how the dealer should go about making a heat gain calculation—*Armstrong Furnace Co., Dept. AA, 851 W. Third Ave., Columbus 8, O.*

Industrial Ventilation

FOURTH EDITION of the Industrial Ventilation Manual ($4) contains information needed for the design of industrial ventilation systems. The manual is approved for use by governmental industrial hygiene units and is the text and guide used in industrial ventilation courses at many universities. Subjects covered include

Pocket More Profit Per Job!

BUCKEYE PRE-FAB PIPE and FITTINGS TURN TIME INTO MONEY FOR YOU

One man can put up any length pipe by grouping Buckeye Snap-Tite 5' and 2' sizes.

Because time is money in your business, it is good business to spend more of your time where it is most profitable — making more sales calls and estimating more jobs.

By using Buckeye standardized pipe and fittings, you can cut shop time and labor. Low cost Buckeye pipe and fittings are precision-made to go up on the job quickly and easily . . . come in sturdy, clearly marked packages . . . and have extra quality construction features that assure a neater job and better customer satisfaction.

Ask your wholesaler or write direct for the Buckeye Time-Saving Catalog

TIME SAVING STANDARDS

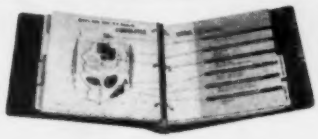
ADI STANDARDIZED FITTINGS

BUCKEYE
FURNACE PIPE COMPANY
897 Ingleside Columbus 8, Ohio

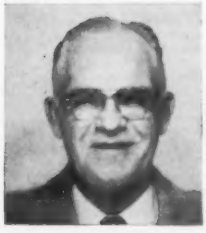
Report #3

THE G-E "VEEP" IN ACTION

How new G-E "Magic Sales-Maker"--a consumer visual sales presentation, popularly called "The Veep"--helps increase sales for G-E Home Heating and Cooling Dealers



How "VEEP" buttoned up sales of 7 furnaces in a small Missouri market



L. C. BOWEN, General Heating and Cooling (General Electric Distributor) St. Joseph, Mo.

Seven furnaces sold through one mailing! That's the profit-heavy job done by a dealer in Brookfield, Missouri. And since there are only about 2,000 homeowners in Brookfield, it took something special to build a record like that!

And the Stubblefield Home Improvement Co. used something special — a two-fold attack (1) They mailed out imprinted copies of a G-E mailing piece to practically every home owner in town. (2) They followed up inquiries with the "Veep" visual sales presentation. The results were very impressive in all respects.

Stubblefield's distributor, General Heating and Cooling Co., of St. Joseph, Mo., is sold on this two-prong approach and is using it. L. C. Bowen, General's wholesale salesman, is masterminding similar strokes throughout the territory. As a result of Bowen coaching, one dealer made a sale the first night he used the "Veep."

Watch for more true sales stories like this one — in future G-E advertisements in this publication. They all teach the same lesson:—the profit-wise home heating and cooling dealer is the one who has climbed on the G-E Bandwagon. Want to join up?

FREE! Sales Secrets That You Can Use. Exciting success stories by G-E salesmen tell how they broke sales records with the aid of the "Veep." For your copy write GENERAL ELECTRIC, HOME HEATING AND COOLING DEPT. (AA-86) TYLER, TEXAS.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Home Heating and Cooling Dept., Bloomfield, N. J.

WHAT! NO STANDBY LOSS?

THAT'S RIGHT—

LO-BLAST

POWER-GAS BURNER

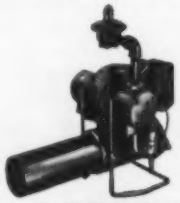
ELIMINATES THE FUEL WASTE CAUSED BY UNCONTROLLED DRAFT

When an atmospheric gas burner shuts off, the rush of draft air through the boiler or furnace carries heat with it up the chimney...causing a serious waste of fuel.

Since a burner is turned on and off several times an hour by the thermostat, a typical heating plant operates only about 2,000 hours of a 6,000 hour heating season. Hence, with an ordinary burner, "standby loss" occurs two-thirds of the time.

In contrast, the Lo-BLAST Power Gas Burner does not depend upon natural draft, but upon air supplied by a small, *quiet* blower. It provides combustion air *only when the burner is on!* When the burner shuts off, only enough air for pilot combustion is admitted. The heating plant retains much of its heat between operating cycles.

That's why Lo-BLAST Burners average 10% less in operating cost. Capacities of 75,000 to 20,000,000 BTU give complete coverage of residential, commercial and industrial fields.



Lo-BLAST ECONOMITE
The residential Lo-BLAST Burner—capacities 75,000—500,000 BTU.

Send today for complete information on the Lo-BLAST Power Gas Burner

MID-CONTINENT METAL PRODUCTS CO.
1960 N. Clybourn Ave., Chicago 14, Ill.

new literature (*Continued*)

General Principles of Ventilation, Dilution Ventilation, Comfort Ventilation, Hood Design, Duct Design, Makeup and Recirculation Air, Construction Specifications, Testing of Ventilation Systems, Fans, and Air Cleaning Devices—*Committee on Industrial Ventilation, American Conference of Governmental Industrial Hygienists, Dept. AA, P. O. Box* 453, *Lansing* 2, *Mich.*

Winter Air Conditioning Units

ILLUSTRATED winter air conditioner merchandisers contain feature descriptions and specifications of various types of heating units. Included are descriptions of gas and oil fired highboy, lowboy, heavy duty, counterflow and horizontal models—*Airtemp Div., Chrysler Corp., Dept. AA,* 1600 *Webster St., Dayton* 1, *O.*

Commercial Air Heating Equipment

SPECIFICATIONS for gas and oil fired packaged air heaters for commercial and industrial applications are given in a 14 page illustrated catalog. Included are keyed diagrams showing dimensions and details of construction of type "F" floor mounted units; type "H" units for horizontal mounting; and type "I" models for inverted mounting—*Auto-Therm Mfg. Co., Dept. AA,* 6400 *E. Seven Mile Rd., Detroit* 34.

Oil Tank Gages

DATA SHEET covers "Tattle-Tale" oil tank gage featuring spring steel flexible float rod. Also described are No. 3-B faucet gages for fuel oil barrels and No. 5-B "Storm Proof" vent caps for fuel oil barrels and outside storage tanks—*Homeward Products Co., Dept. AA,* 3420 *S. W. Ninth St., Des Moines, Iowa.*

Resistance Welding

CATALOG OF RESISTANCE WELDING products (56 pages) describes standard and special spot welding electrodes, seam welding electrode wheels, dies, backup bars, shafts and bushings. Sections of the catalog are devoted to recommendations and usage of special alloys and electrode materials, applications, and physical and mechanical properties of alloys. Ask for catalog No. 56—*Weldaloy Products Co., Dept. AA,* 11551 *Stephens Dr., Van Dyke (Detroit), Mich.*

Metallic Coating

PAMPHLET describes "Metco" metallic coating said to prevent paints, lacquer, enamel or other siccative coatings from peeling off the surfaces of galvanized metal.—*Soljo Paint Mfg. Co., Dept. AA, Trenton* 3, *N. J.*

"CRESTOGRIP"

The NEW Utility Plier

BY CRESCENT

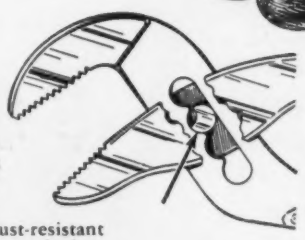
30% THINNER
TWICE AS STRONG
GRIPS LIKE A PIPE WRENCH

CLEAN, SHARP TEETH
FLUSH RIVET NO PROJECTIONS
BOX JOINT ADJUSTABLE TO 4 POSITIONS UP TO 1½" CAPACITY
EXTRA THIN—ONLY ½" AT THICKEST POINT
NON-SLIP CHECKERDOT KNURLING
CRESCENT TOOL CO JAMESTOWN, N.Y.
P-210
PATENT PEN

Crescent's No. P210 Utility Plier is completely new ... revolutionary! It's not a "slip-joint" plier and not to be confused with conventional lap-joint "pump" pliers. Its *double-strong* box joint design is absolutely unique and assures a powerful grip like that of a pipe wrench without sideways twist or strain. It will grip flat, square, hex or round objects with powerful leverage.

QUICK, POSITIVE ADJUSTMENT

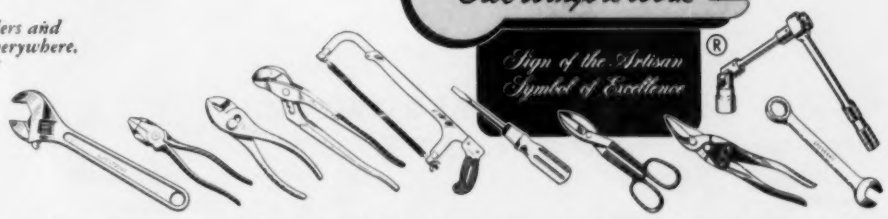
This cut-away view shows joint construction with its extra generous bearing surface at the arrow point. Adjustment is made by simply "walking" the rivet recess over the bearing point with a pumping action of the handles. Easy, positive, capable of heavy loads.



Handsomely finished in rust-resistant zinc plate. Overall length 9½ inches.

Sold by hardware dealers and industrial distributors everywhere.

CRESCENT TOOLS
Give Wings to Work
Sign of the Artisan Symbol of Excellence ®



Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by

CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK

we hear that . . .

WEBSTER ELECTRIC CO.'s traveling showroom-shop, featuring exhibits of new developments in oil heating equipment, is expected to attract some 3000 wholesalers, dealers and servicemen during its tour of the New England states

▸ THE WEBSTER ELECTRIC CO. recently launched a traveling oil heat show in the New England states. More than 200 stops in 100 cities are scheduled.

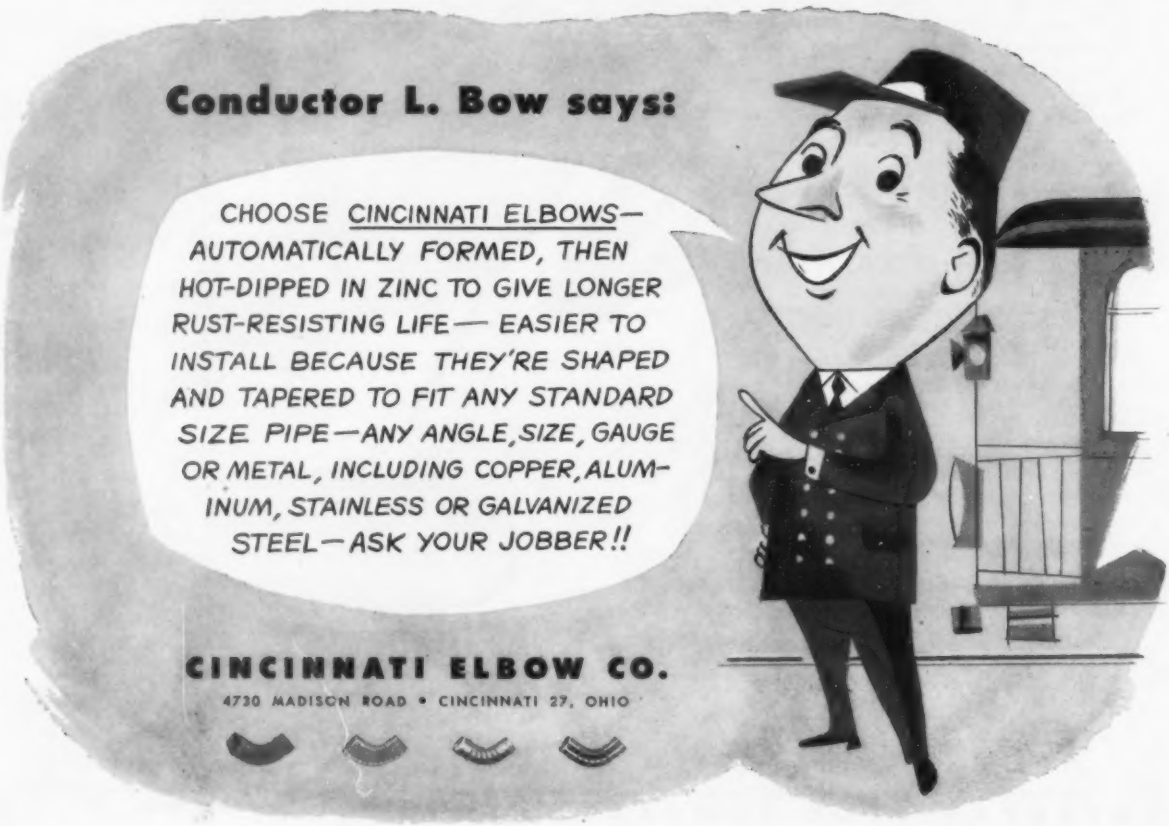
▸ MASON M. ROBERTS, a vice president of General Motors Corp. and general manager of its Frigidaire Div., has retired and is being succeeded as head of the division by Herman F. Lehman. Mr. Lehman, who has been with General Motors for 31 years, was also elected a vice president of the firm.

▸ ROY C. INGERSOLL was elected chairman of the supervisory board of directors of the York Div., Borg-Warner Corp. at the board's organization meeting held recently in York, Pa. Mr. Ingersoll is chairman and chief executive officer of the Borg-Warner Corp. S. E. Lauer was elected president and chief executive officer of the York Div. The board confirmed a new company, the York Corp., a subsidiary of Borg-Warner Corp., which will perform and be responsible for all factory and field sales operations for the York Div.

▸ NATIONAL-U. S. RADIATOR CORP. of Johnstown, Pa. and the Union Asbestos & Rubber Co. have signed an agreement providing for the transfer of the air conditioning division of Union Asbestos & Rubber Co. to National-U. S. Radiator Corp.

▸ THE HOME HEATING AND COOLING Department, General Electric Co., has moved into its new facility located in Tyler, Texas.

▸ ROBERT LODGE, sales manager of the packaged air conditioner division of Mitchell Mfg. Co., Div. of Cory Corp., recently introduced an air conditioning product which, he said, "represents the transition between room air conditioners and central residential


Conductor L. Bow says:
CHOOSE CINCINNATI ELBOWS— AUTOMATICALLY FORMED, THEN HOT-DIPPED IN ZINC TO GIVE LONGER RUST-RESISTING LIFE— EASIER TO INSTALL BECAUSE THEY'RE SHAPED AND TAPERED TO FIT ANY STANDARD SIZE PIPE—ANY ANGLE, SIZE, GAUGE OR METAL, INCLUDING COPPER, ALUMINUM, STAINLESS OR GALVANIZED STEEL—ASK YOUR JOBBER!!
CINCINNATI ELBOW CO.
4730 MADISON ROAD • CINCINNATI 27, OHIO

KLIXON FTC*
On the Job!

Levittown, Pennsylvania is the world's largest planned community. Built by Levitt and Sons, Inc., it contains 14,000 fine homes and more are being added daily — when finished, there will be some 17,000 homes in all, occupying a tract of 8 square miles.

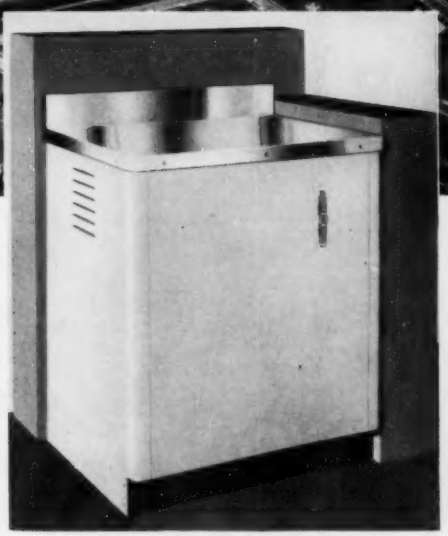
And what of KLIXON FTC* at Levittown? York-Shipley boilers, equipped with KLIXON FTC*, were selected for the heating job at Levittown on the basis of outstanding performance and economy. The application of two KLIXON C4370 Controls was made in York-Shipley's Engineering Laboratory, with fixed temperature settings selected to give top overall boiler performance. One control operates the oil burner and circulating pump, and the other acts as a high limit.

The boilers operate the year 'round, supplying both domestic hot water and house heating as needed, with high efficiency and remarkable freedom from service calls.

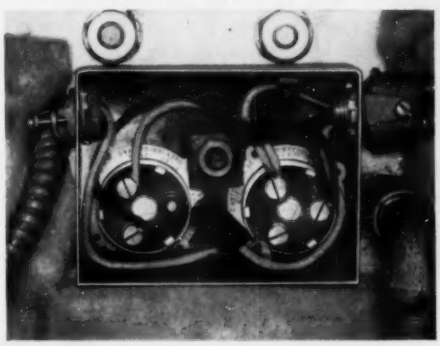
Here are the advantages of KLIXON FTC* in both "wet" heat and "dry" heat applications:

- Control application is laboratory engineered.
- Lab performance is delivered to the job.
- Service calls resulting from tampering are eliminated.
- Peak control efficiency lasts indefinitely.

*FTC "Fixed Temperature Control" assures proper operation of the unit as designed by the manufacturer.



Application of KLIXON FTC* in York-Shipley house heating boilers, Levittown, Pennsylvania.



METALS & CONTROLS CORPORATION
SPENCER THERMOSTAT DIVISION
3508 FOREST STREET, ATTLEBORO, MASS.

KLIXON®

we hear that

(Continued)

units." Mr. Lodge said the 2 hp unit will air condition up to 1000 sq ft of space, will retail for $445 plus installation costs.

ENGINEERS who recently joined the staff of Viking Air Products are (l to r) John Palasics, William Page, Robert Allwein, L. D. Cochran, Robert Ross and Stanley Morse

▶ VIKING AIR PRODUCTS, Div. National-U. S. Radiator Corp. recently added six engineers to its research and development staff. The engineers will work on the development of new furnace blowers, humidifiers, "multipurpose" and attic fans.

▶ THE AIR REDUCTION SALES CO. has produced a 20 minute slide film entitled "Always On the Job," covering the basic principles of safety in electric arc-welding. The film is available from any of the company's offices on a free loan basis, or may be purchased for $15.

▶ WHEELING CORRUGATING CO. recently opened a new office and warehouse building at 340-400 27th Ave., N. E., in Minneapolis. Among the products stocked by the Minneapolis warehouse are galvanized sheets and roofing, conductor pipe, eaves trough and fittings. Territory served includes the states of Minnesota, Montana, North Dakota, South Dakota and parts of Iowa and Wisconsin.

▶ NEARLY 100 heating and air conditioning dealers and servicemen attended four service schools recently conducted by Conco Engineering Works in its factory class room at Mendota, Ill. Jim Wells, service manager, was in charge of the series of three day courses on furnaces and air conditioners. Classes for each session were limited to 25 men in order to give each serviceman an opportunity to perform typical service operations. As part of the course, each group was briefed by company executives on sales, advertising, research and other company policies applying to 1956 equipment.

Let's talk dollars & sense
ABOUT LOCK ROLLING MACHINES!
It's common sense to buy a lock rolling machine that will make you the most dollars—that's the Flagler. Here's why:
● Better engineering throughout — built for fast, steady production.
● Three-piece shaft assembly—easier to change or replace rolls, gears or shafts. All rolls powered.
● Rolls quickly changed for making any standard locks. Pittsburgh lock rolls supplied on one end of shaft—your choice of rolls on other end.
The Flagler Heavy Duty "22", shown complete with Power Flanger, produces over 30 ft. per minute of Pittsburgh lock without crowding. Other rolls make straight uniform drive cleats, double seam or right angle flange.
The FLAGLER Corporation
Phone Twinbrook 3-3161
19325 FILER AVE. DETROIT 34, MICH.
FLAGLER MACHINES FOR SPECIAL LOCK ROLLING PROBLEMS
Consult Flagler engineers if you have a special lock, flange or shape to roll. There's a Flagler for every requirement!

CRANE

NOW! Add waterless cooling to any furnace...with 2-, 3-, or 5-ton units

It's getting hotter all the time. Not just the weather —but air conditioning business. And you can profitably handle any job with the complete Crane line of Year 'Round Air Conditioners and Add-on units.

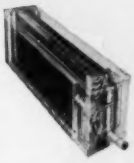
The new "A" type condenser opens a whole new field of air conditioning prospects. This evaporator coil fits on any basement or hi-boy furnace. It is available with a galvanized plenum for easy and quick installation atop the air discharge opening.

Complete with Minneapolis-Honeywell summer-winter thermostat, it's available in 2-, 3-, and 5-ton sizes.

See your Crane Branch or Crane Wholesaler about this new waterless add-on unit.

CRANE CO. General Offices: 836 South Michigan Avenue, Chicago 5, Illinois
VALVES • FITTINGS • PIPE • KITCHENS • PLUMBING • HEATING

CRANE FLAT COIL UNITS



Horizontal flow evaporator coil fits in duct of basement, utility or horizontal type furnace where air supply trunk is extended in one direction. Insulated coil cabinet prevents sweating.

Frame mounted flat coil slips into Crane's Year 'Round Air Conditioner. Available for hi-boy or counterflow models in 2-, 3-, and 5-ton sizes!

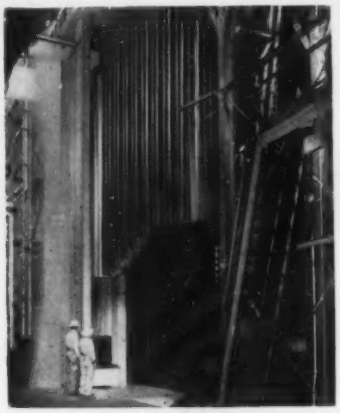
Weatherized compressor cabinet for unsheltered, outdoor installation. Quiet centrifugal blower. All surfaces bonderized and coated with baked-on enamel.

we hear that

(*Continued*)

TOM WILLIAMS, Hall-Neal Furnace Co., congratulates Mrs. James Korty, who won a "Victorcoal" heating unit

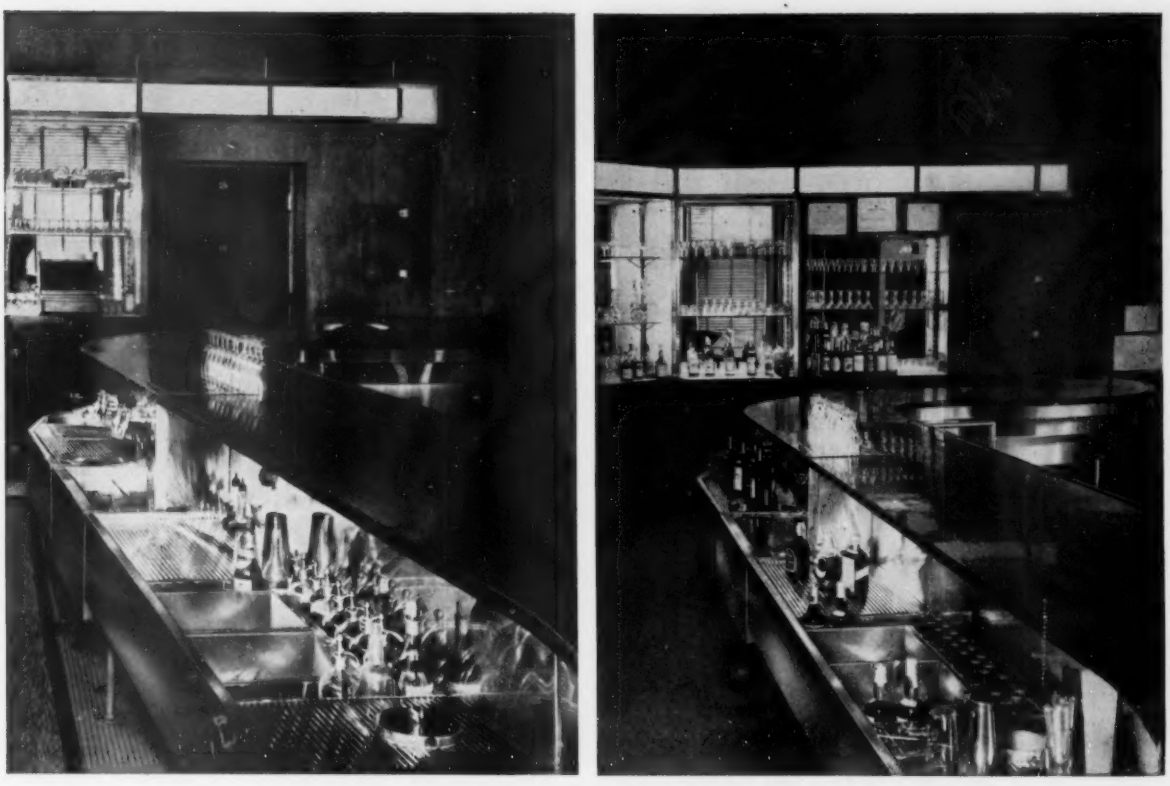
▶ TOM WILLIAMS, assistant sales manager of the Hall-Neal Furnace Co., was one of the participants in the convention program of the Indiana Coal Merchants Association held recently in French Lick, Ind. Mr. Williams also presented the grand prize—a "Victorcoal" winter air conditioner—to Mrs. James Korty, who submitted the best idea for a theme for next year's convention.



STEEL ROOF DECK panels enter the paint process machine at Inland Steel Products Co.

▶ INLAND STEEL PRODUCTS CO. has installed three new cold forming mills in its Milwaukee plant. According to the company, the three mills can turn out up to 180 ft of steel roof deck in one minute's time.

You need NO SPECIAL TOOLS...
to make them fit!
Dieckmann Elbows are made from one piece terne coated, iron and steel, hot dipped galvanized after formation. Also made of all other standard metals in a full range of sizes and angles.
• Ask for illustrated catalog #47 and other literature.
The Ferdinand Dieckmann Co.
1180 Harrison Avenue
Cincinnati 22, Ohio



Underbar, backbar trim and curved panels on the front of the bar in the Roger Smith Hotel, Holyoke, Massachusetts, were fabricated 21 years ago from Armco Stainless Steel. **The photo at left was taken in 1935**

WHICH PICTURE WAS TAKEN IN 1935?

Sheet Metal Work of Armco Stainless Still Bright After 21 Years

Here's visual proof of the long-lasting good looks of Armco Stainless Steel sheet metal work. It's easy to see why it's first choice where service is as tough as anywhere—in busy restaurants and bars.

PROFITS FOR YOU

You can turn this preference for stainless into profits. Attractive work with Armco Stainless Steel for bars, restaurants and hotel dining rooms will pay you well. What's more, each job will be a silent salesman—meeting the public daily, helping to sell more jobs for you.

There's no end to profit possibilities with Armco Stainless Steel. Here are just a few: Home kitchens, roof drainage, building trim, commercial equipment jackets, ductwork, chutes and a wide variety of special industrial equipment.

Armco Stainless Steel grades you need are available from the Armco Distributor near you. If you don't know him, just write us for his name.

ARMCO STEEL CORPORATION

1906 CURTIS STREET, MIDDLETOWN, OHIO

SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

we hear that (Continued)

NEW MEMBER of the Consolidated Tribes of American Indians Konrad Adenauer receives a membership plaque from William Wheelock, Mueller Climatrol

▸ WILLIAM WHEELOCK, Mueller Climatrol, took part in the induction ceremonies when Chancellor Konrad Adenauer of the Federal Republic of Germany was made an honorary member of the Consolidated Tribes of American Indians. Following the ceremony, Mr. Wheelock, a tribal chieftan as well as a Mueller shipping department employee, presented the chancellor with a plaque commemorating the occasion.

▸ THE PLASTICS DIV., Monsanto Chemical Co. plans the construction of a "House of Tomorrow" in Disneyland to demonstrate and test the use of plastics in home construction. Construction is expected to start late in the year, with completion scheduled for early 1957.

▸ FLEXIBLE TUBING CORP. reports that the new Dallas Insurance Center, built with future expansion in mind, features flexible ducting in its air conditioning installation. Foreseeing that relocation of room partitions might be necessary at some future date, resulting in changes in room areas, the architects made provisions for moving of the air conditioning diffusers in the room ceiling. Through the use of flexible ducting as connectors between main ducts and diffusers, the company says, it will be possible to move diffusers four ft in any direction should this become necessary.

▸ CARLYLE M. ASHLEY, chief staff engineer, Carrier Corp., has been named president of the American Society of Refrigerating Engineers and Everett Palmatier, Carrier director of research, has been elected

For greater heating efficiency and savings specify this **NO. P-54 BASEBOARD DIFFUSER**

Here's a new addition to our line for perimeter baseboard installations.

- **Adds beauty to every home**
- **Reduces installation time and labor**
- **Increases heating efficiency and comfort**

Packed in shipping cartons: 2 and 4 ft. lengths shipped assembled. 6 and 8 ft. lengths shipped knocked down.

Look at these features:

● Easy quick installation ● All you have to do is place unit over hole and fasten ● Dampers are made in two foot lengths and operate separately for closer control of air flow at register face ● The P-54 is designed for both old and new installations and can be installed before or after finish flooring and plastering.

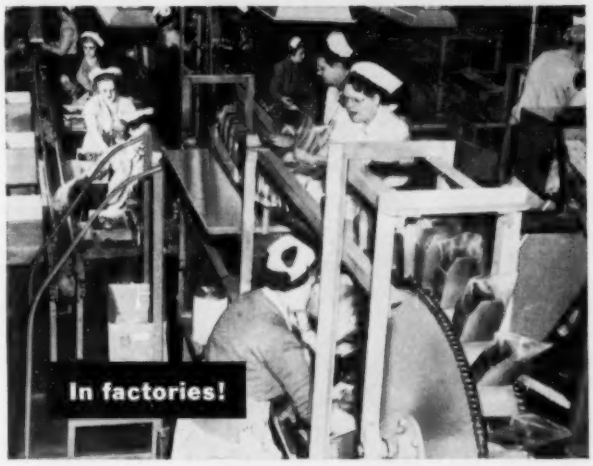
Ask your jobber for complete details and prices or write direct to:

THE A & A REGISTER COMPANY
8327 CLINTON RD. CLEVELAND 9, OHIO

The Market's All Around You

with super-efficient

PLIOTRON



Cleaner air, everywhere, is what you sell with PLIOTRON — the world's first washable, panel-type, electrostatic air filter. And every home, store or factory with an air conditioning or forced warm air heating system is a potential customer.

PLIOTRON is much more than an ordinary filter. Its plastic filter medium actually attracts and captures up to 400% more fine dust and dirt particles than ordinary filters. Moreover, it's easily installed—slips into any standard holder—and it's completely washable — can be restored to like-new efficiency with a quick bath.

PLIOTRON costs more than the average filter, but the difference is more than justified by the added cleanliness and added service it will give your customers. It's a product you'll take extra pride and extra profit in selling. For more information, write to Goodyear, Pliotron Sales Dept., Akron 16, Ohio.

PLIOTRON
AIR CLEANER by

Pliotron—T.M. The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

THE GREATEST NAME IN RUBBER

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Radio Network—THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network

we hear that

(*Continued*)

to the society's board of directors. Both men were installed at ASRE's annual meeting held recently at the Hotel Sheraton-Gibson, Cincinnati.

EXECUTIVES of A. Nabakowski Co. are (l to r) Harry Earl, T. M. Doan, J. F. Nabakowski (vice president), M. W. Nabakowski (president), R. I. Hubbard (secretary), Edwin Haynes and R. L. Becker

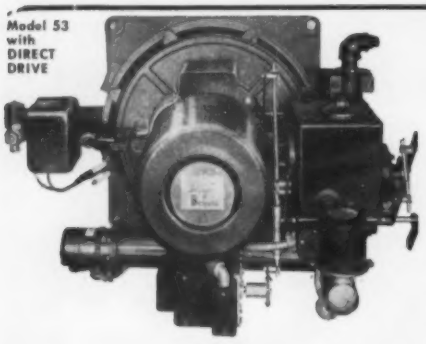
▸ A. Nabakowski Co. has appointed four employees to serve as executive staff members under the direction of the company's president, M. W. Nabakowski. They are Robert L. Becker, executive assistant to the president in charge of sales and estimating; Edwin C. Haynes, executive assistant to the vice president in charge of all operations; Harry Earl, plant manager in charge of the fabrication shop; and T. M. Doan, director of purchases.

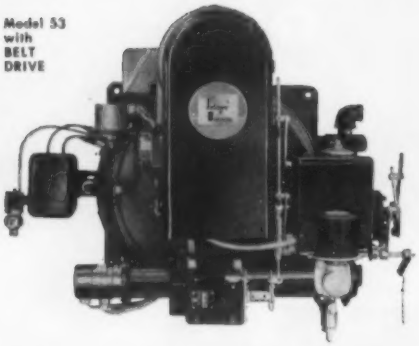
▸ Rolled Steel Products Div. of Emergency Steel Service Corp. plans the construction of a new office and warehouse building at a cost of approximately $550,000. Site of the new building is a four acre tract of land located on the Chicago-Skokie, Ill. border line.

▸ Chase Brass & Copper Co. has moved into new and larger quarters at 4641 McRee Ave., St. Louis. The new facility has about 40,000 sq ft of warehouse space and some 7500 sq ft of office space.

▸ Harald C. Mueller, president of the Powers Regulator Co., has been elected president of the Illinois Tech Alumni Association.

▸ William Wallace Co. has opened a new warehouse at 5160 Alhambra Ave., Los Angeles to provide improved service and faster deliveries to southern California customers. The company's southern California district sales office has also been moved to the Alhambra avenue location.





SETTING NEW STANDARDS OF PERFORMANCE

Positive "Cold Starts"
Higher Efficiency
Greater Economy

JOHNSON Model 53

METERING PUMP BURNERS

This revolutionary new Johnson "Fifty Three" will give you smooth, sure, automatic "Starts" even when the oil in storage tank and lines is cold and hard to pump. It is built with a positive-displacement Metering Pump . . . a 3-Way Magnetic Oil Valve . . . and a high-efficiency Suction Pump that enable the "Fifty Three" to maintain a fixed air-fuel-ratio regardless of variations in oil temperature and viscosity. It will start up and operate automatically on colder oils than any other burner on the market. Never before has any burner so successfully solved the "Cold Starts" problem.

It is available with either Direct Drive or Belt Drive in 8 sizes from 25 HP to 500 HP . . . with all the fine engineering that have made Johnson Burners famous for economy and high efficiency for over half a century. It's built with all working parts readily accessible for easy servicing, inspection or regulating. If you haven't seen it yet, make it a point to investigate this revolutionary new burner. May we send you a copy of our beautiful new Model Fifty Three brochure?

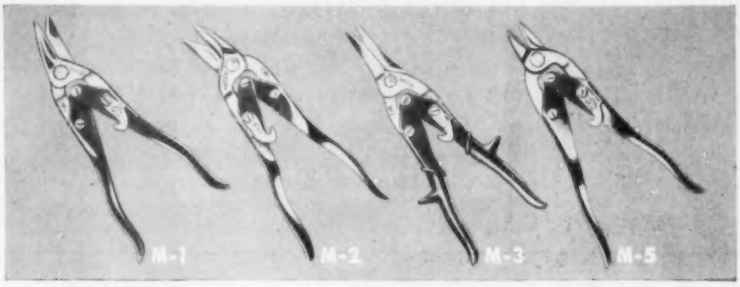
Builders of fine Oil Burner Equipment since 1903

Johnson Oil Burners

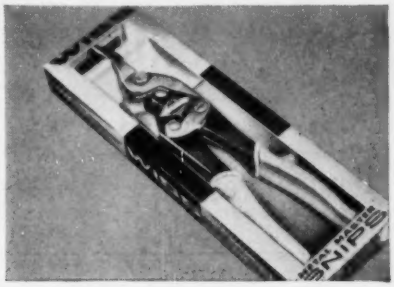
S. T. JOHNSON CO.
940 Arlington Ave., Oakland 8, Calif.
Church Road, Bridgeport, Pennsylvania

"WE HAVE SOLD WISS SNIPS MANY YEARS BECAUSE THEY HAVE THE BEST ACCEPTANCE BY THE TRADE"

Mr. Otto Hart, President of Hart Industrial Supply Co., Oklahoma City, Okla., gives one good reason why his firm prefers Wiss Metal Cutting Snips. There are several reasons why they are the choice of professional workers everywhere—why they sell better, with fewer returns. Wiss snips are produced largely by the handwork of skilled workers. Each pair is rigidly tested and guaranteed perfect. Bolts are set precisely to reduce wear and to increase cutting power with the least effort.

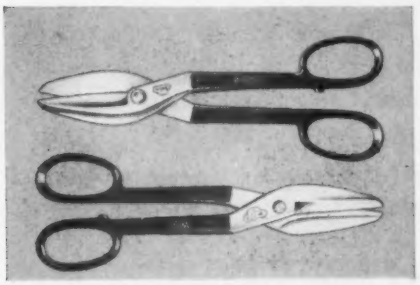


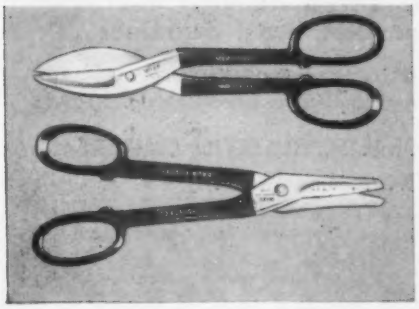
WISS METAL MASTER SNIPS: Compound action design delivers amazing cutting power. These 10" snips cut with about one-half the effort required for standard 12½" snips. One edge serrated to prevent slipping. M-1 (cuts left) and M-2 (cuts right) are designed to cut the most intricate scrolls and circles. M-3 is for shallow arcs and straight cutting. M-5 Bulldog Heavy Duty snips are tops for notching, nibbling and cutting shallow arcs in sheet metal as heavy as 16 gauge.



NEW HANDLE GRIPS IN BRIGHT IDENTIFYING COLORS!

Famous Wiss Metal-Master snips are now available with vinyl plastic grips – tough, resilient, long-wearing, acid and grease resistant. For instant identification by the worker, M-1R is fitted with bright red handles; M-2R with green handles; M-3R with yellow handles.





WISS INLAID SNIPS

High carbon crucible steel welded to a hot drop-forged frame provides that *extra* service demanded by professional users everywhere. Six Straight Cutting sizes from 11½" to 17", including Bulldog Snips for notching. Three Combination* Cutting sizes, 12½", 13½" and 14½".

WISS SOLID STEEL SNIPS

For those whose requirements are less specialized than the professional user. Hot drop-forged of fine carbon steel, they meet or exceed government specifications. Four straight cutting sizes, 8" to 12½". Four Combination* Cutting sizes, 7", 10", 13" and 16" Bulldog Snips for notching.

*Made with straight blades, but ground and shaped so they readily cut curves and irregular shapes as well as straight.

WISS the Winner in laboratory tests!

In grueling tests made by an independent laboratory, Wiss Metal-Master, inlaid and solid steel snips out-performed other leading brands. Wiss snips in each category proved to cut cleanly with less effort required. The tests were so severe that some competing brands were damaged – cracked at bolt, handle bent out of shape. This is conclusive, unbiased *proof* that Wiss snips are the finest and most satisfactory available to metal workers. The laboratory report stated: "Wiss inlaid straight cut snips showed far superior cutting qualities than the other shears tested and should be listed in a separate class from the solid steel snips."

J. WISS & SONS CO., NEWARK 7, NEW JERSEY

World's Largest Manufacturer of Shears, Scissors, Pinking Shears, Metal Cutting Snips and Garden Shears

wholesaler doings...

K. G. MacCART, president of Petroleum Heat and Power Co. Inc. signs new wholesaler franchise as G. Bowdoin and P. H. Shaw of Worthington Corp. look on

▸ THE PETROLEUM HEAT AND POWER CO. INC. of Stamford, Conn. will act as wholesale distributor of Worthington Corp.'s air conditioning products in Long Island, N. Y. and Westchester and Fairfield counties, Conn.

▸ "LET PEOPLE KNOW you're in business," is the theme of Hot and Cold Flashes, a dealer paper issued by General Heating and Cooling Co., Salina, Kans. distributor. There are many ways "to tell the people," the paper points out, such as radio and billboard advertising; neon signs; window displays; modernized showrooms; direct mail; etc. Sales tips, helpful technical information and success stories of members of the dealer organization are a part of every issue.

▸ THE HURON STEEL CO., 2701-23rd St., Detroit has been named a distributor of "Enduro" cold finished stainless steels in the Detroit area by Republic Steel Corp. J. Ivan Fiscus is president of Huron Steel.

▸ SEVERAL HEATING WHOLESALERS have recently been appointed by the Permaglas Div. of A. O. Smith Corp. to handle the distribution of its home heating and air conditioning products. They are: Mytelka & Rose, Inc., Newark, N. J.; Gas Heat Distributors, Inc., Charlotte, N. C.; Savannah Refrigeration Supply, Inc., Savannah, Ga.; N. B. Handy Co., Lynchburg, Va.; Sales Eastern Corp., Inc., Richmond, Va.; George E. Bagwell Co., Montgomery, Ala.; Excelsior Heater & Supply Div., St. Paul, Minn.; A. G. Brauer Supply Co., St. Louis, Mo.; Heaven Engineering Co., Kansas City, Mo.; Electrical & Mechanical Supply Co., Inc., El Paso, Texas; Southern Wholesalers, Inc., Jackson,

Super Model SH

Only The Super Can Do The Job So Well

No other furnace cleaner has as many design and construction features for doing a thorough cleaning job as the Super Model SH. No other furnace cleaner is as capable of creating the kind of customer satisfaction that means repeat business and new prospects for plants and services.

- **Cleans all kinds of heating plants**
- **Light weight**
- **Wet and dry suction**
- **Cleans 'em hot or cold**
- **Available with stainless steel or enamelled steel container**

Ask your local Super dealer.
Write for complete specification data.

THE NATIONAL SUPER SERVICE COMPANY
1944 N. 13th St., Toledo 2, Ohio

Sales and Service in Principal Cities
In Canada: Plant Maintenance Equipment Co. Toronto, Montreal, Vancouver

"Once Over Does It"
SUPER SUCTION®
SINCE 1911
"THE DRAFT HORSE OF POWER SUCTION CLEANERS"

YOU Need This
Air Conditioning Catalog

Wholesale Only

It's FREE

Illustrates, Prices and Describes

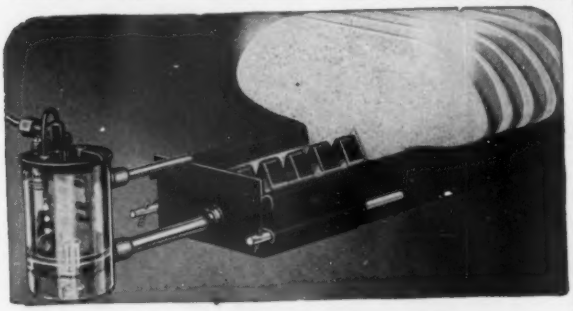
OVER 10,000 ITEMS

AIR
CONDITIONING
REFRIGERATION
ELECTRIC MOTORS
Parts and Supplies

We sell you — NOT your customers. And we sell for less. Buy — by mail — with confidence from our DEPENDABOOK catalog. Prompt deliveries of fresh stock — for less!

Write for your copy today on your letterhead to

The HARRY ALTER CO., INC.
1717 S. Wabash Avenue, Dept. G, Chicago 16, Illinois
Branches in New York, Dallas, Atlanta



There's a PROPER SIZE Monmouth for every Heating Unit

Monmouth does not offer just one size Humidifier for all heating units. It provides a complete range of sizes and capacities to do the job properly — for the correct size pan and correct number of plates are essential to efficient operation. This is especially vital with modern automatic forced air heat, with relatively low bonnet temperature, where sufficient diffusion to convey moisture to the volume of air handled is absolutely necessary. When you install the proper size Monmouth, your job is not half done, but ALL done. The complete line includes various Flotrol Models — the No. 310 for your smaller jobs and the Monmouth gas-fired Humidity Conditioner for all radiator systems. Write for descriptive Bulletins.

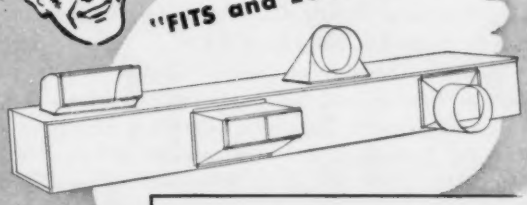
THE CLEVELAND HUMIDIFIER CO.
7802 Wade Park Avenue — Cleveland 3, Ohio

MONMOUTH HUMIDIFIERS

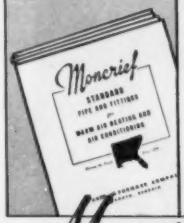
"SAVES YOU MONEY"

"EASY TO ASSEMBLE"

"FITS and LOCKS TIGHTLY"



SEND FOR *New* CATALOG



Standardized
DUCTS and FITTINGS

MONCRIEF offers a complete line of Prefabricated pipe and fittings for any type of Heating or Cooling system. All precision made, at low mass production cost. Prompt shipment from Atlanta Factory makes MONCRIEF the South's most dependable source of supply on Duct Work, Registers, Grilles and Diffusers. Save time and money by ordering from your jobber TODAY.

Moncrief FURNACE COMPANY
P. O. BOX 1673 — ATLANTA, GEORGIA

BEVERLY *Pneumatic* THROATLESS SHEAR

CAPACITY
3/16 MILD STEEL
10 GA.
STAINLESS

FASTER,
EASIER CUTTING
to any Shape!

- **Compactly built for maximum visibility and efficiency**
- **Operates on 35 to 150 PSI air pressure**
- **Adjustable power and return stroke length and speed**

Beverly Pneumatic Shears combine all the advantages of Beverly Throatless Shears with fast, effortless cutting action through air cylinder operation. Air operation speeds work, permits accurate cutting to a pattern or template, as operator can concentrate on guiding work through the shear. Flow control valves permit precise adjustment of stroke speed; adjustable actuating arm controls stroke length. Foot Switch permits operator to use both hands on the work piece. Operates on 110V. 60 cycles AC and 35 to 150 PSI air pressure.

See your nearby Beverly Distributor
Write for catalog sheet and complete details.

BEVERLY SHEAR MANUFACTURING CO.
3020 W. 111th STREET • CHICAGO 43, ILLINOIS

wholesaler doings

(Continued)

Miss.; Model Plumbing Supply Co., Los Angeles; Ventilating Equipment Co., Los Angeles; Pease-Briggs Co., San Leandro, Calif.; Ware McClelland Co., Phoenix; Southwest Supply Co., San Diego, Calif.; and S. & S. Supply Co., San Jose, Calif.

Named to handle distribution of water heaters as well as heating and air conditioning products are Forest City Electric Supply Co., Rockford, Ill.; Northwest Oil & Equipment Co., Moorhead, Minn.; Bush Supply Co. of Harlingen and McAllen, Texas; and Service Supply Co., Victoria, Texas.

▸ THERMO-FLEX CORP., with general offices and warehouse at 1202 Norwood Ave., Toledo, has been formed to distribute glass fiber products on a national basis. Heading the new firm as president is R. W. Capaul, formerly vice president, general products sales, for L. O. F Glass Fibers Co.

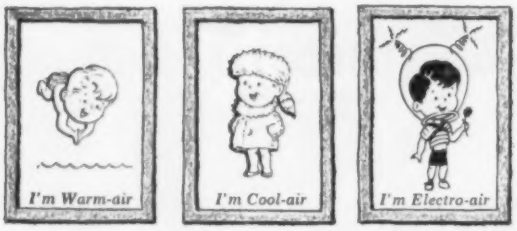
R. W. Capaul

▸ AIR ACCESSORIES, Fort Worth and west Texas distributor, cooperated in the project to remodel and modernize a home which was salvaged from the path of a new expressway. The remodeled home, featuring a furnace donated by the Air Accessories firm, was displayed at the Home Improvement Show at Fort Worth. Because the home was also on display before remodeling began, the improvement made possible by modernization was brought to the public with dramatic effect.

▸ HENRY FURNACE SUPPLY CO., Columbus, O. has been franchised by York Corp. to distribute residential and commercial air conditioners in the Columbus area. The Henry company is owned by Mrs. Lillian E. Spoerlein.

▸ THE PARKER CO., 4655 Colorado Blvd., Denver has been named to distribute Amana room and central air conditioners in Colorado, parts of Wyoming and western Nebraska. Officers of the firm are A. H. Brenker, president; W. C. Campbell, vice president; and E. W. Dickson, secretary.

▸ INSULATION SUPPLY CO., INC., 1704 Orleans St., Dallas has been appointed insulation distributor for the city of Dallas and northeast Texas by Gustin-Bacon Mfg. Co.



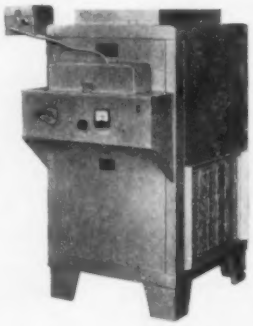
a house becomes a home with TRIPLETS

A "home" forced air ventilating system is complete *only* when it includes the TRIPLETS-WARM-AIR COOL-AIR & ELECTRO-AIR.

There is an Electro-air Electronic Air Cleaner of suitable dimensions and air handling capacity to furnish clean pure air in every size home. The cost is moderate, too.

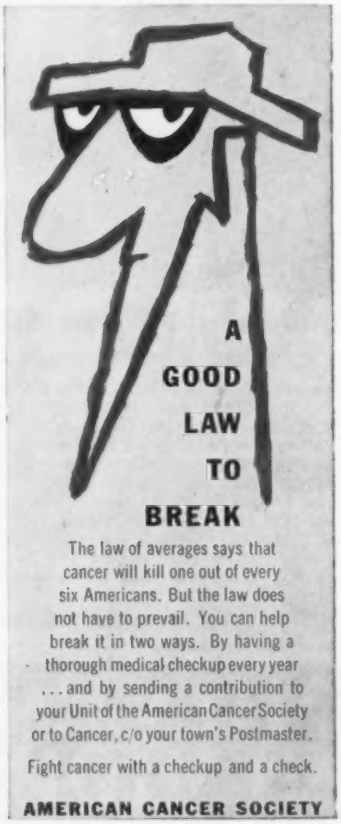
Electro-air "Compact Line" units are available in both "horizontal air flow" and "vertical air flow" models from 800 cfm to 4,800 cfm.

All parts including selenium rectifiers are guaranteed for five years.



WRITE FOR CATALOG C-10-B

ELECTRO-AIR CLEANER COMPANY
1285 REEDSDALE STREET, PITTSBURGH 33, PA.



The law of averages says that cancer will kill one out of every six Americans. But the law does not have to prevail. You can help break it in two ways. By having a thorough medical checkup every year . . . and by sending a contribution to your Unit of the American Cancer Society or to Cancer, c/o your town's Postmaster.

Fight cancer with a checkup and a check.

AMERICAN CANCER SOCIETY

MODERN BUSINESS

AND MODERN SCHOOLS

NEED EACH OTHER MORE THAN EVER!

This has been a great year! America is building and replacing and thus moving faster than ever before.

Only one thing. Will the labor market keep pace?

That's where schools are important. If your company isn't helping community groups to get modern schools, it's not apt to get the skilled people it needs. Self interest, civic spirit, or both, you should make schools your business, too.

PUBLIC SERVICE ADVERTISING COUNCIL

Want to find out how to help in *your* community?
Get specific information by writing:
Better Schools, 9 East 40th Street, New York, N. Y.

Cut Installation Costs!
One hammer blow permanently rivets

E-Z-ON

E-Z-ON Damper Controls are easily, quickly installed to save you time and money. E-Z-ONS lower initial cost offers you additional savings and extra profits. Start saving money now. . . . Call your jobber today!

LEADING JOBBERS STOCK "EZ-ONS"
In Canada — THERMIDAIRE CORP. LTD. Toronto

M. A. GERETT CORP.
724 WEST WINNEBAGO STREET, MILWAUKEE 5, WISCONSIN

NEW IMPROVED **Vaporite**

Automatic Humidifier

Series 555

Corrosion Resistant
Stainless Steel
Vapor Pan 4" x 15"

ONE SIZE . . . ONE KIT ASSURES LOWEST COST INSTALLATION AND MINIMUM INVENTORY EXPENSE

Vaporite No. 555 Humidifier comes completely assembled in one package. No extras to buy . . . no parts to assemble . . . no extra holes to cut . . . no pan leveling or tricky mounting.

NEW IMPROVED VALVE — Provides more positive drip-feed thermostat operation. Water drips fastest when furnace is hottest . . . pan is dry when furnace is cold. Adjustable for precise vaporization needs of each installation.

Write for Catalog A-8

AUTOMATIC HUMIDIFIER CO., Cedar Falls, Iowa

merchandising ideas

▸ THE AIRTEMP DIV., Chrysler Corp., recently sponsored a "Prospect and Win" sales contest for its commercial air conditioning dealers and dealer retail salesmen. Prize points were offered not only for actual unit sales but for all air conditioning "proposals" submitted to potential purchasers as well. Prizes included expense-paid vacation trips and a choice of merchandise such as suede shoes and other wearing apparel, cameras, electric saws, playing cards, porch furniture, etc.

▸ AIR CONTROL PRODUCTS, INC. has developed a compact display showing its complete line of registers, grilles and diffusers. Fifteen units are shown on the pyramid type display which occupies only 2 sq ft of floor space and can be turned for close inspection.

▸ THE MATCH INDUSTRY INFORMATION Bureau, 500 Fifth Ave., New York 36, N. Y. has prepared a brochure, The Best Read Book in America, which is being offered to anyone interested in statistics and information on techniques of designing and distributing advertising match books.

▸ "NAMETTE" plastic name plates that can be fastened to equipment by adhesive or plastic pins provide a means for dealers to identify their installations. According to the manufacturer, almost any name or design can be reproduced, and a variety of sizes is available. For more information write to Berglund-Swenson Co., Inc., 550-8 Elm St., Arlington, N. J.

▸ "IT'S IN THE AIR," a 16 mm color motion picture film is being offered for free showings to schools, churches, clubs and other groups by the Airtemp Div., Chrysler Corp. The film relates in a non-technical manner a number of facts about the earth's atmosphere and explains how man, through the use of modern air conditioning equipment, can now control important aspects of his atmospheric environment. It has recently been modernized so that viewers see air conditioners of the latest design.

▸ FOR THREE MONTHS beginning last February, dealers of the Bryant Div. of Carrier Corp. stepped up cooling sales by offering customers a "Moduflow" control system free of charge with the purchase of central systems in 2, 3 or 5 ton capacities. The dealers were provided with a kit which displayed the controls—an electronic control, outdoor thermostat, indoor thermostat and a flush-mounted timer clock—on a background of black velvet. Broadsides, envelope stuffers and ad mats were additional dealer helps provided by the division. The company reports that sales in the period were up some 200 percent over the same months of the previous year.

YOUR BEST INVESTMENT . . .

LEVER **WHITNEY** PUNCHES

PORTABLE HAND OPERATED PUNCHES AND SHEARS.

A TOOL FOR EVERY PURPOSE.

LEADERS SINCE 1907

NO. 2 PUNCH

Capacity 5/16" hole through ¼" iron
Length 23". Wt. 14 lbs. Depth of throat 1-11/16"
Punches and dies 3/32" to ½" by 1/64"

Also available — our Channel Iron Punch for use on angle and Channel Iron

NO. 8-8 PUNCH

Capacity ¼" hole through ¼" iron
Length 18½". Wt. 7½ lbs. Depth of throat 2"
Punches and dies 1/16" to 7/16" by 1/64"

Please Write Today for Literature

See Your Jobber

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

A FAMOUS NAME IN HEATING BRINGS YOU NEW PROFIT ADVANTAGES ON GAS CONVERSION BURNER INSTALLATIONS

THE BANNER "JET-8" BURNER

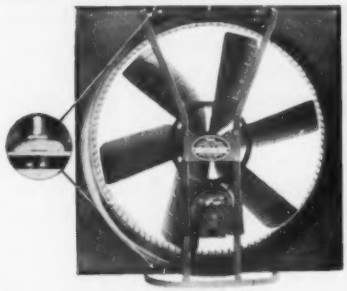
THE JET-8 IS A SUPERIOR NEW DESIGN AND CONSTRUCTION WITH UNMATCHED ADVANTAGES FOR YOU:

- Designed to eliminate all delays and difficulties when installing—telescoping venturi, compact parts, other design elements provide a truly universal unit to fit all furnaces and boilers.
- Top quality components throughout, such as one-piece chrome alloy cast iron burner head, Minneapolis-Honeywell Powerpile controls, assure customer satisfaction, eliminate costly callbacks and adjustments.
- Completely competitive price despite highest quality.
- Full input range—80,000 to 200,000 BTU—delivered assembled, ready to install.

TEST FOR ALL PROFIT LEAKS AFTER EACH INSTALLATION AND YOU WILL SWITCH TO THE JET-8

You owe it to your business to get full details. Write.

BANNER BURNER COMPANY
227 EAST INDIANOLA AVENUE, YOUNGSTOWN, OHIO



- *Easier to Install*
- *New Quiet Operation*
- *Competitive Prices*

COOLAIR Ventilating Fans

For quiet, general purpose ventilation at lowest cost, you can't beat the Coolair type CQ shown here. It's ideal for schools, auditoriums, and stores . . . wherever a quiet fan is needed.

Exclusive rubber vibration insulators, as shown in the insert photo, are built into the fan frame. You can meet specifications for resilient-mounted, wall-type fans with far less installation trouble and cost. No bother with mounting fan on rubber or felt.

Proof that Coolair prices are competitive—Coolair fans were used on all four U. S. 3rd Army barracks rehabilitation projects started in the summer of 1955.

Write for Free Catalog Folder:

AMERICAN COOLAIR CORPORATION
3610 Mayflower Street
Jacksonville 3, Florida

HUNTING FOR MORE PROFITS?

HUNT FOR

C&L LAMNECK

AIR DISTRIBUTION PIPE AND FITTINGS

Save 25% of fittings cost compared to shop fabrication. Sold only through recognized wholesalers. Clayton & Lambert Mfg. Co.—1025 Lamneck Street, Middletown, Ohio.

FOR SOUND ECONOMY

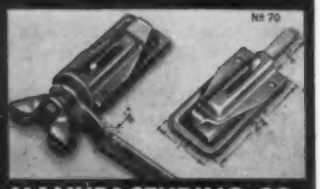
H&C

KWIK-WAY DAMPER REGULATOR SETS

No. 69 SET
SINGLE BEARING
for SMALL DAMPERS

Retractable bolt and quick, easy means of fastening bearing are among features that make this the most convenient and economical set available.

ONE BLOW SETS BEARING SECURELY



No. 70 SET
for LARGER DAMPERS

Identical with No. 69 except with 2 retractable bolt bearings.

HART & COOLEY MANUFACTURING CO.

500 EAST EIGHTH ST., HOLLAND, MICH.

Now... Quickdraft

PROVIDES LOW-COST INDUSTRIAL EXHAUSTING *WITHOUT* MOTOR OR FAN OBSTRUCTION IN EXHAUST LINE

N-365-QD

★ ELIMINATES DOWN-TIME FOR CLEANING AND REPLACING FAN BLADES ★ CUTS MAINTENANCE COSTS

For venting problems involving abrasives . . . corrosive gasses . . . noxious fumes . . . high temperatures . . . moisture . . . and steam . . . Quickdraft offers unequaled advantages. It does not obstruct vent line. Its fan and motor operate in clean or outside air. It does not require a stack. It cuts installation and maintenance costs. Quickdraft is a power draft unit that also provides the constant draft required for perfect combustion in heating plants.

STANDARD and HEAVY DUTY models for vent diameters 4, 6, 7, 8, 9 and 10-inches exhaust from 8,460 to 60,000 CFH . . . (with or without stacks).

COMMERCIAL models for vent diameters 12, 14, 16, 18, 20, 22, 24 and 30 inches exhaust from 141,600 to 877,000 CFH . . . (with or without stacks).

Quickdraft Engineering Data

Greater capacities on special order . . . send for engineering data, today.

Quickdraft COMPANY

Dueber-Hampden Building
P. O. Box 87-D • Canton 1, Ohio

appointments . . .

▸ C. E. FORD as head of the Timken Silent Automatic Heating and Cooling Div., the Scaife Co. Mr. Ford has been with the Scaife Co. for 10 years serving in various sales and administrative capacities. F. M. Jordan, formerly assistant sales manager for the Timken division, has been appointed general sales manager. R. E. Loebell, named director of merchandising, will have the responsibility for market research, product planning and development, and distribution planning. K. O. Ralphs was named sales manager under general sales manager Jordan. Prior to his recent appointment he was in charge of the Illinois district.

▸ C. H. MENGE as general sales manager of the Frigidaire Div., General Motors Corp.

C. H. Menge

Robert G. Werden

▸ ROBERT G. WERDEN as north Atlantic district manager of the York Corp. Mr. Werden, who will have his offices in New York City, has been industrial sales manager of the company's middle Atlantic division for the past 10 years.

▸ GEORGE L. LEUPOLD as assistant general sales manager of the Fulton Sylphon Div., Robertshaw-Fulton Controls Co. Mr. Leupold joined the company in 1946 as district manager of the Cincinnati office.

▸ GEORGE E. BOSCH as a member of the sales staff of the Ingersoll Conditioned Air Div., Borg-Warner Corp. Mr. Bosch will be in charge of sales and product development for the division's air distribution and diffuser program. He was formerly a sales engineer in the Indianapolis area for the Hall-Neal Furnace Co.

▸ THOMAS D. KELLY as manager of the midwest district for Crane Co. Mr. Kelly, formerly manager of the company's Chicago branch, joined the firm in 1927. Succeeding him as manager of the Chicago branch is Harold H. Stift, who is being replaced as assistant manager at Chicago by Donald R. MacCrimmon. Darrell R. Nordwall, formerly Los Angeles branch manager, has become northeastern district manager. Frank R. Perry has been promoted to Los Angeles branch manager and Robert E. Muse has been named assistant manager at Los Angeles. John

The MODERN Lighter Tube
With the Slanting Blue Flame

Today's Great Contribution to Gas Appliance Safety and Dependability!

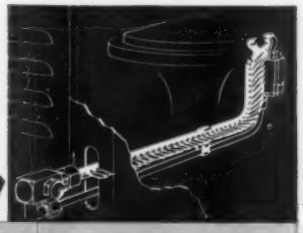
To safeguard all users of gas-fired heating equipment and appliances against hazardous lighting methods, more and more manufacturers are engineering the MODERN Lighter Tube into their units. Utilities and wholesalers too, strongly favor the MODERN Lighter Tube as a component part of all gas-fired units. Dealers recognize it as a vital sales feature. Available in aluminum or stainless steel ⅜ O.D. tubing.

The MODERN Lighter Tube offers the utmost in . . . .

★ SAFETY
★ DEPENDABILITY
★ SIMPLICITY
★ CONVENIENCE

MM CO.

PERFECTED OUTSIDE LIGHTING



MODERN MATERIALS CO.
NORTHVILLE MICHIGAN

FLANGES THE DUCT with Amazing Speed!

Less than 5 seconds on short and lighter pieces . . .
Slightly longer on bulkier pieces

MAKES PERFECT DRIVE-CLEATS TOO!

The ONLY tool that does both. A complete drive cleating tool . . . no set-up time . . . no adjustments. Handy to take out to the job when not needed in the shop. Turns idle time into production time. Flanges any square duct up to 20 gauge. Quickly pays for itself in time, material and labor savings.

No. 12 Smith's Cleat Bender (12" wide) . . $49.80*

No. 18 Smith's Cleat Bender (18" wide) . . 78.60*

PERFECT DRIVE CLEATS fit the duct without the use of a screwdriver.

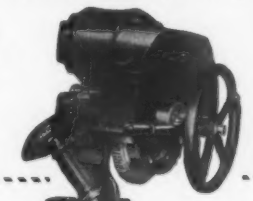
TREMENDOUS SAVINGS in erection time and labor.

*F.O.B. Waukegan, Illinois
Prices subject to change without notice

R. E. SMITH
1124 Elizabeth Avenue • Waukegan, Illinois

THE RIGHT SHEAR FOR ANY CUTTING JOB

MARSHALLTOWN



ROTARY
THROATLESS
SHEARS

CUTS ALL SHAPES—SIZES
● QUICKER
● EASIER
● FASTER

Here's a shear that's right for every job. Speedy — efficient. Cuts up to ¼ inch stock — speed to 6 ft. per minute. Excellent for irregular cutting or straight splitting. Available in hand operated or motorized models. Prompt shipment. Send today for special illustrated bulletin.

MARSHALLTOWN MANUFACTURING COMPANY
Marshalltown, Iowa

✓ FEWER EMERGENCY CALLS FOR YOU

RENEW FILTER Signal warns in advance of furnace troubles developing from dirt-clogged air filters—eliminates the most common cause of service complaints.

✓ BETTER HEATING FOR YOUR CUSTOMERS

RENEW FILTER Signal tells when it's time to replace dirty filters—guarantees clean, comfortable heat at all times; worthwhile savings on fuel and cleaning bills; protection against furnace damage.

Bacharach FILTER GAUGE

Fits all types of heating and cooling units.

Accurately adjustable for any kind of replaceable or washable filter.

Easy to install. Drill 4 holes and mount—no connection across filter—no electrical connections.

Suggested Retail Price, $6.35 plus installation charge.

ASK YOUR JOBBER OR WRITE FOR LEAFLET #15

FG-4a

BACHARACH INDUSTRIAL INSTRUMENT CO.
7301 PENN AVENUE • PITTSBURGH 8, PA.

"SHORT SODER FACTS"

From L. B. ALLEN

1 The greater the tin ratio in soder — the more resistant the soder is to vibration.

2 Free soder charts full of vital information are now available. Write us today!

3 Allen fluxes for sodering, brazing, and welding are fast, safe and dependable. Sold only through distributors.

AT IT SINCE '93
ALLEN
L.B.ALLEN CO.INC.
6701A Bryn Mawr Ave.
Chicago 31, Illinois

ORNAMENTS
STAMPINGS & SPINNINGS
Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.
If you don't have catalog K, send for it NOW.
MILLER & DOING
89 ADAMS STREET BROOKLYN, N. Y.

appointments

(Continued)

F. Heaslett, former assistant to the manager of the west coast district, has been appointed San Diego branch manager. Robert W. Bomesberger has been appointed manager of the Detroit branch, and James A. Beekman will be manager of the Rockford, Ill., branch. Leo F. Regan was appointed to the newly created position of assistant branch manager at Springfield, Mass.

▸ Dale H. Bodine as manager of educational services for Copeland Refrigeration Corp. He was with the firm from 1939 to 1952 as service manager, leaving in 1952 to become part owner and general manager of Allied Supply Co., Lima, O. wholesalers.

▸ Fred W. Segerstrom, formerly manager of transportation sales for the L.O.F Glass Fibers Co., as general sales manager of the company's General Products Div., which handles thermal and acoustical insulation materials. Mr. Segerstrom will headquarter at the general offices in Toledo. He succeeds R. W. Capaul, who has resigned.

M. Ray Greene

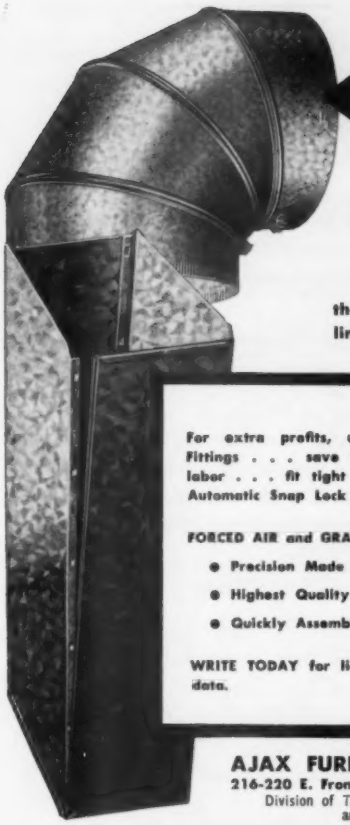
Harold E. Rossiter

R. W. Puterbaugh

▸ M. Ray Greene as regional manager of a newly created regional area which includes the Buffalo, Cincinnati and Cleveland branches of Inland Steel Products Co. Mr. Greene will be responsible for the administration of regional sales activities and will direct manufacturing and other operations for all branches included in the region. Harold E. Rossiter has been named manager of the newly opened Atlanta, Ga. district sales office. The new office is located at 83 Cain St., N.E. Raymond W. Puterbaugh has been appointed general sales representative in Minnesota and North and South Dakota.

▸ The Paller Engineering Co., with offices at 3025 N. Illinois St., Indianapolis and 2212 S. Calhoun St., Ft. Wayne, as a factory representative for the Fan and Blower Div., Peerless Electric Co.

▸ Henry J. Linskey as sales engineer in the Philadelphia-Wilmington area for Thatcher Furnace Co. Mr. Linskey will be responsible for dealer sales-service in the territory.



AJAX

PRE-FABRICATED DUCTS and FITTINGS

the *complete* streamlined line . . .

For extra profits, use AJAX Pipe and Fittings . . . save installation time and labor . . . fit tight and fast with AJAX Automatic Snap Lock connections.

FORCED AIR and GRAVITY INSTALLATIONS!

- Precision Made
- Highest Quality
- Quickly Assembled

WRITE TODAY for line catalog giving full data.

AJAX FURNACE FITTING CO.
216-220 E. Front St., Cincinnati 2, Ohio
Division of The Cincinnati Sheet Metal and Roofing Co.

SAVE MONEY!
use CHINC
in place of copper*

Use CHINC wherever you need a tough yet ductile metal that can't rust, solders easily, forms readily, requires no painting and won't stain light woodwork or masonry.

CHINC—the non-ferrous sheet metal used in Europe for over 100 years—newly improved by Cheney—offers these exclusive features:

- Will not corrode in mortar
- Resists smoke corrosion
- Resists salt air corrosion
- Costs much less than copper

* CHINC meets U. S. Government specifications calling for zinc alloy metal in lieu of copper.

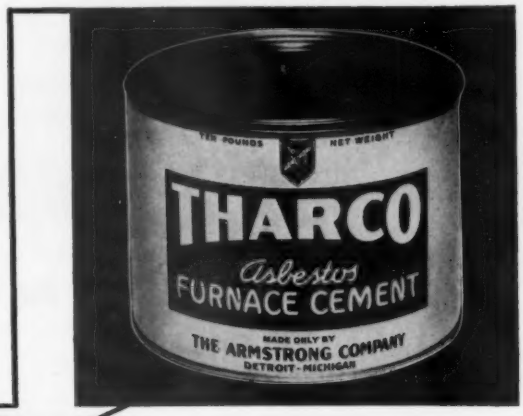
Recommended in plain sheets or rolls for flashings, valleys, fascias, gravel stops, gutters.

Also available in 3-way flashing

Available in "SPANDO" for spandrel flashings

CHENEY

Write for NEW CATALOG . . . CHENEY FLASHING CO.
Dept. AA7, Trenton, New Jersey



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appointments

(Continued)

▸ THE LAKE ERIE SALES CO., 11409 Miles Ave., Cleveland as a direct factory representative covering Ohio and western Pennsylvania for Boston Machine Works Co. The Lake Erie firm will handle the sale of "BosMaco" oil heating supplies.

▸ FRED MULCAHY as a sales engineer in the oil burner division of Delavan Mfg. Co.

Fred Mulcahy

Joe Bernard

▸ JOE BERNARD as a sales representative handling the sale of gages to the oil burner industry in the Philadelphia area, comprising Delaware and parts of Pennsylvania and New Jersey, for Rochester Mfg. Co. Mr. Bernard was formerly connected with the Sid Harvey Co. of Pennsylvania.

Obituaries

James H. Robinson

JAMES H. ROBINSON, 90, former sales manager of the Hart & Cooley Mfg. Co., died in Chicago, June 12, 1956. Mr. Robinson joined the firm in 1906 and served in a sales capacity until 1941. He was elected honorary chairman of the board in 1928.

Robert Suettinger

ROBERT SUETTINGER, past president of the Sheet Metal Contractors Association of Wisconsin, Inc., died June 27, 1956 in Two Rivers, Wis. He was 72 years old. Mr. Suettinger had been in the sheet metal business in Two Rivers all his life. He was president of the Wisconsin association for the years 1932 and 1933.

Herman J. Otten

HERMAN J. OTTEN of H. J. Otten Co., Inc., sheet metal contractors of Buffalo, N. Y., died June 23, 1956. Mr. Otten, well known for his activities in association affairs, served as president of the New York State Sheet Metal, Roofing & Air Conditioning Contractors Association for the term 1937-38.

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Spring is just around the corner and hundreds of thousands of heating plants will be shut down for the summer season. During the Spring and Summer of 1956 the cleaning of these furnaces will be big business. "Be prepared" to get your share of this profitable business. The requirements are simple: All you need is a service department, an expert crew and a GENERAL "GIANT" FURNACE CLEANER. The General "Giant" is the most powerful vacuum power cleaner in the furnace cleaning industry today. In addition, $300 down starts you in business and earning $100 or more a day.

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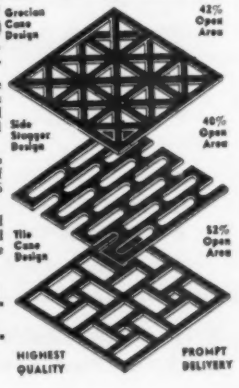
Send us your blueprints. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.



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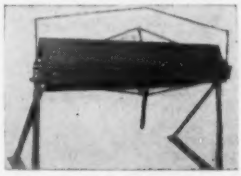

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"CORRECT PRACTICE in OIL HEATING"

This special series covers every angle of oil burner work, including arrangement of shop . . . stocking parts . . . record-keeping . . . installation procedures . . . the handling of crews . . . how to make heating surveys . . . size combustion chambers . . . install thermostats . . . start burners . . . use testing instruments . . . and operate a service department. It contains, as well, a complete list of causes and cures of oil burner trouble—57 pages of practical helps. Send $1.00 for a copy to the address below. KEENEY PUBLISHING COMPANY, 6 No. Michigan Ave., Chicago 2, Ill.

✔ SITUATIONS OPEN

Sheet metal men. First class all around mechanics. Must know layout, fabrication. 28 to 35 yrs. Only ambitious men need apply. Union shop. Write stating qualifications, AMERICAN SHEET METAL, 2709 Halladay St., Santa Ana, California.

Sales and service engineer familiar with domestic heating and air conditioning. Excellent opportunity for fully qualified man. P. O. Box 104, Little Neck, N. Y.

Factory Sales Representative — Well-known manufacturer of nationally advertised furnaces and air conditioners needs aggressive, ambitious sales representative with good heating and cooling background. Experience selling heating dealers or wholesalers necessary. Should have experience conducting sales and dealer schools, know all phases of warm air heating. Must be free to travel entire state of Michigan. Salary, commission, expenses. Our men know of this ad. Write full particulars, stating age, qualifications, income requirements to Key 1056, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

✔ PATENTS

INVENTION RECORD and Patent Information Booklet free on request. Franklin W. Durgin, Registered Patent Agent, c/o Evergreen Farm, 12500 Meadowood Drive, Silver Spring, Maryland.

✔ AGENTS WANTED

MANUFACTURER'S REPRESENTATIVE WANTED — To sell time-saving specialty machine to sheet metal shops . . . through wholesalers or direct. Profitable. Machine pays for itself in 20 hrs. of use. Write stating experience, lines handled, territory covered. Address Key 1054, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

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Profitable, GOING Sheet Metal and Roofing Business for sale — doing $100,000 annually. Inventory, equipment, real estate included. Only one in radius 100 miles. Owner retiring. Terms. Defenbaugh & Co., Grenada, Miss.

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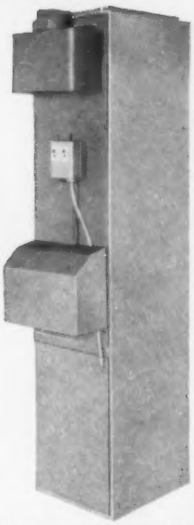
- NEW -

FORCED-AIR GAS-FIRED HEATERS

A GOOD BRAND



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Two sizes HBD-70 Input rating 70,000 Btu., HBD-85 Input rating 85,000 Btu. Have return air inlet at bottom of unit, warm air outlet at the top.

All Heaters are equipped with "Whisper-Quiet" rubber mounted direct drive blower.

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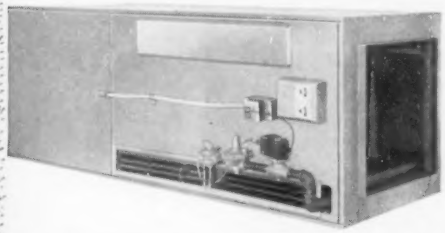

ATTIC TYPE AFS-110, Input 110,000 Btu.

Side flue outlet requires no additional height for diverter installation

Space requirements kept to absolute minimum.

Attractive grey-green hammer finish.

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CFD-85, Input 85,000 Btu. Has return air inlet at top, and warm air outlet at bottom suitable for perimeter heating.

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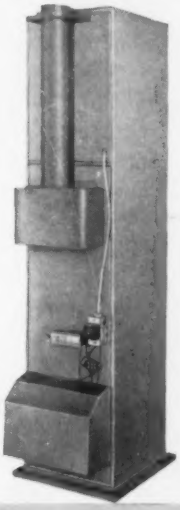
All heaters are A.G.A. Approved for operation with natural, mixed, manufactured and LP gases.



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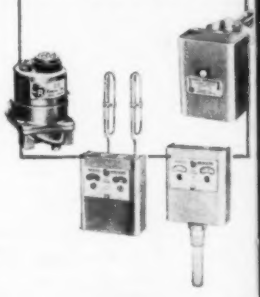

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